THE BUILDER

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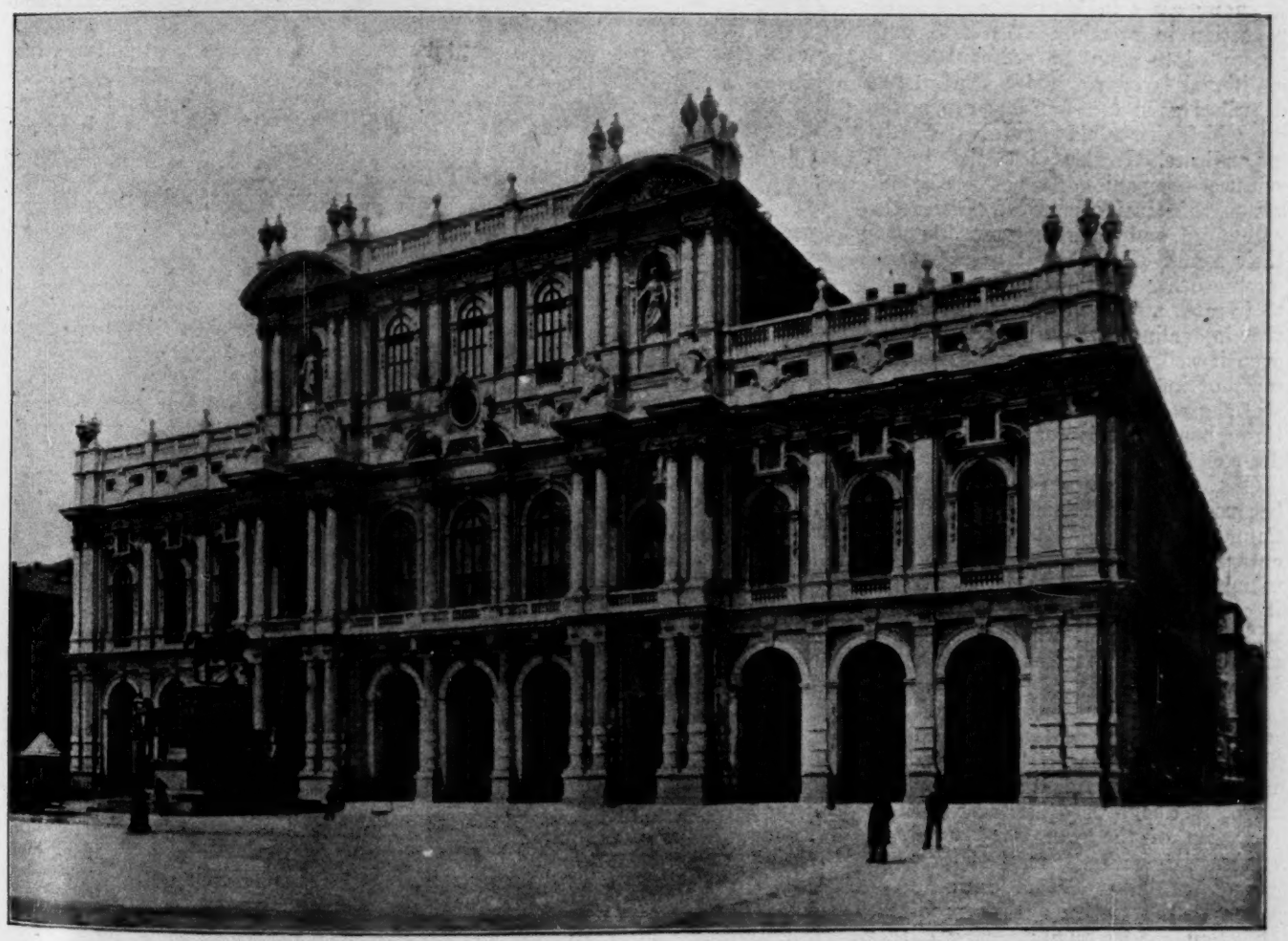


The Palazzo Carignano, Turin.

Visitors to the forthcoming International Exhibition at Turin will notice the imposing building shown above. It is in the Piazza Carlo Alberto, where it is faced by Baron Marochetti's bronze statue to the King after whom the square was named. The above façade to the Carignano Palace was built between 1864-1871, and it was the work of Gaetano Ferri, of Bologna, and Giuseppe Bollati, of Novara. Until 1864 the building was the House of Deputies; it is now devoted to museum purposes.

FIRE PROTECTION IN THE CITY.

At the inquiry into the recent Barbican fire Colonel Fox, Chief of the London Salvage Corps, expressed the view that the warehouses in this district had been rebuilt in much the same manner as they were before the great Cripplegate fire—a statement that will probably surprise many of our readers, considering the great strides that have been made in fire-resisting construction during recent years. That no alteration has been made in the width of the streets is comprehensible, when we consider the value of sites in this district, and that the great fire, extensive though it was, hardly covered an area sufficient to render realignment commercially advantageous; but when we turn to the construction of the buildings themselves we may well be astonished that none of the steps pointed out as desirable after that disaster have been generally taken.

According to the statements of Colonel Fox, which are confirmed by Mr. C. W. Surrey and representatives of the leading fire insurance companies, in interviews accorded to the *Morning Leader*, the recent buildings are mostly constructed with the ordinary wood floors and staircases and without special protection in

the form of wired glass and metal shutters to the windows.

In view of the fact that an additional 10 per cent. added to the cost of a building would cover the additional cost of fire-resisting construction, except perhaps in the case of very inflammable contents, it might be supposed that this expenditure would be found well worth while. But when an increase of, say, 5 per cent. to the rent (allowing a due proportion to the fixed site value) comes to be balanced against the reduction in the premiums offered by the insurance companies, it is found that the latter is insufficient to justify the extra cost. In the case of stock of a very valuable nature it is possible that the reduction in premiums on building plus stock would outweigh the additional rent, but landlords can hardly be expected to speculate on circumstances so uncertain.

Mr. Percy B. Tubbs, in a communication to our contemporary, points out that in many cases in his own practice the reduction in premium offered has only amounted to about 2½ per cent. on the additional outlay, which he rightly describes as not a business proposition on which he could advise the extra expenditure. In his view the fire insurance companies do not realise the amount of security improved construction will afford, and might be more liberal in their terms. Probably these companies, on the other hand, would contend that their rates are based on experience, and that in dealing with an isolated building, even if well protected, in the midst of a mass of inflammable property, there is still a greater risk than if the buildings throughout the district were of similar fire-resisting character.

We have not discussed the risk to life because the regulations of the London County Council in this respect seem to ensure that adequate steps will be taken to minimise this, and though, of course, it can hardly be expected that all risk will be eliminated, we are moving in that direction as fast as can reasonably be expected.

In one direction the outlook of those interested in fire protection is hopeful. The apparently inevitable appreciation in the price of suitable timber for building purposes, due to the otherwise regrettable depletion of the sources of supply, in conjunction with the marked economies that have been effected during recent years in the methods of fireproof construction are gradually wiping out the difference in cost, and it is quite within the range of possibility that in the near future this difference will be so small as to be almost negligible and very little will turn the scale in favour of the fire-resisting building. We have by no means reached finality in this respect, and have every reason to anticipate further advances in the direction of increased economy and efficiency in constructive design.

With regard to other precautionary measures, the use of wired glass in small courts and areas might well be made compulsory, and the inexpensive metal jalouses, such as are in use all over the Continent for excluding the sun) but, of course, not louvred) could be fitted to all windows within range of flames from other blocks. The main objection to these is the limitation of the window area due to the necessity of providing piers sufficiently wide for these to fold back against, but if these shutters are made double folding the windows can still occupy nearly two-thirds of the whole width of the external wall, as much as is at present provided in a great many cases. We should not be disposed to advise revolving shutters, both on the ground of expense and that of their liability to get out of order when only used at rare intervals; perhaps some inventor might devise a handy form of shutter that would fold into the reveals of the window openings. In any case, we feel that the question merits the careful attention of those architects who are dealing with this class of building.

THE GOTHIC REVIVAL IN HOLLAND.

THOUGH the development of church architecture in Holland during the last half-century has not been wholly unnoticed in England, there are few, perhaps, even among architects, who are aware of its claim upon those interested in such movements. Indeed, the mediæval churches of the country themselves have not, in spite of their imposing size, attracted many students—a fact due in part, no doubt, to their largely derivative character, their generally late and somewhat stereotyped forms, and the Calvinistic nakedness of their interiors; this last a trait from which, here and there, recent disclosures of frescoes and decoration tend in some slight measure to redeem them. Holland, in fact, is thought of chiefly as the land of the quaint and the picturesque; that of the painter rather than of the architect.

The Dutch Revival school of church design is, nevertheless—and partly in virtue of this pictorial strain in the race—of a highly remarkable character, while in no country save England probably has church building been so active during the period under review. This activity is mainly due to the presence, in a rapidly-growing population, and especially in the south, of a large and zealous Catholic body, from whom the ancient churches of the land have for the most part been alienated. Both in town and country, along the more frequented lines of travel, one sees everywhere a new generation of ecclesiastical edifices whose scale is no less remarkable than their number. Inheriting the tradition of magnitude, these modern church builders do not, to use a current phrase, "think parochially," but rather *cathedrally*. And so for the most part nothing less will serve them, even for a parish church, than a cruciform building, vaulted throughout, with arcade, triforium, and clearstory, and provided with at least one imposing steeple. Indeed, twin steeples, or a group, are often to be found—a treatment one imagines to be unsupported by precedent in a church of less than collegiate standing. The period of Gothic adopted is generally an early one, lancet or simple geometrical (at times, maybe, a trifle meagre), and the material used is the traditional brick, with stonework introduced for practical and polychromatic purposes; while the indispensable spires are of slated timber. Such conditions are evidently not without their economic motive, since they enable the main fabric to be comparatively quickly and cheaply reared. This done, it can await at convenience the artistic furnishing and decoration which form a further striking feature of this Dutch school of design. Herein, as in other points, it seems to me, its masters excel, in their best work, their brethren of the Belgian Revival, to whom, however, they owe a filial acknowledgment. They have no doubt had opportunities—or necessities—in excess of the latter, endowed as are the people of Belgium with all their ancient church buildings. But there is running through the Dutch work a vigour and originality, and in colour decoration a richness and breadth, peculiarly its own, while none the less an assimilation of those qualities in mediæval models. In such traits we may fairly recognise the modern counterpart of the strong individuality and the love of colour we associate alike with an old Dutch canvas or an old Dutch cottage. There is one important exception, however, to be noted as regards the accessory arts—the stained glass is uniformly inferior, and goes far in some cases to mar the beauty of an otherwise harmonious interior. But it seems questionable whether it is, generally speaking, of native make.

Having to create in some respects a new precedent, and preferring a period of Gothic earlier than that of the generality of ancient churches around him, the modern designer has gone somewhat aside from the traditions of his land. He seems to have looked rather to North Germany and the Baltic than to the Netherlands and the nearer North Sea. His steeples especially suggest this source, while the central lantern is one of his happiest innovations or adaptations. The almost invariable vault, too, contrasts with the frequency of the waggon-head ceiling and tie-beams of the older churches. Occasionally he has experimented—as with steel ribs to brick groins, or a girder frame to a timber-built lantern; while a certain hankering after curious novelties declares itself, as we shall see, in a recent and conspicuous example. But in the main the Dutch Revival displays a simple, bold, and legitimate mode of Gothic brick building, careful of the letter equally with the spirit of the style, and altogether of the highest interest. It is to be regretted that the dull and uniform tint of local brick detracts from the effect of exteriors; but, on the other hand, the thin courses habitually used have here, as everywhere, an excellent appearance.

Naturally, not all the productions of the school are of equal merit; but a certain family likeness connects them, together with an individual stamp impressed by its distinguished parent, the venerable Dr. Cuypers, to whom and to whose immediate disciples the best examples seem to be due. It is of special interest to Englishmen to know that, just as the former has recognised as his master the late founder of the Belgian revival, Baron Bethune (happy, indeed, in his follower) so the Baron publicly acknowledged his debt to Pugin, by whom he was deeply influenced in his earlier years.

Following on this summary, a brief account of some individual churches in different centres, though at best but partial, will no doubt be acceptable. At The Hague are to be seen several striking specimens, three at least of which are cruciform and on an imposing scale. The finest of these is unquestionably that of St. James, Park-street (due to Dr. Cuypers), going back to the year 1878, and probably progressively furnished during the interval. Like its fellows, it has arcade, triforium, and clearstory throughout, and is entirely vaulted in brick. The internal facing generally is of brick, relieved by stone bands with excellent effect, further decorative variety being obtained by picking out the brickwork in parts in different colours, and again by polychromy of the ordinary kind on prepared surfaces. The scheme is daring, perhaps, but effective, and does not form an unsuitable background for the very beautiful and highly-coloured fittings of the edifice. Conspicuous among these are the large Rood with attendant figures on a gallery-beam at a lofty elevation; and the heavily-gilt and painted pulpit and "Pietà," one on either side of the chancel arch. Here a light wrought-iron screen, coloured, and crested with tapers, shuts off the eastern limb, which is narrower than the nave. The altars and other appointments are likewise of a very fine character. Outside, the church is marked by a striking western tower and spire (the latter slated) with some brick pattern work.

More imposing still, externally in particular, is the Church of Our Lady in the Elandstraat, rather more recent in date, with its double west steeples, great height, and three aisled apses—the choir, to wit, and the transepts. A vaulted ambulatory thus runs round the building, having again above it a vaulted triforium gallery. There are two chapels east of each transept. The interior suffers, however, by being entirely finished in plaster—even to the arch-moulds—and the undecorated nave looks very bald. In this portion, by a singular exception, the main arcade is semicircular. Neither the choir fittings, though rich, nor the decoration, are equal to those of the last example, while the glass is very crude. St. Joseph's Church, in scale, design, and equipment, groups with the two foregoing ones. It shows the here not uncommon treatment of dropping and drawing in the sanctuary as distinguished from the choir. The three churches are by different architects.

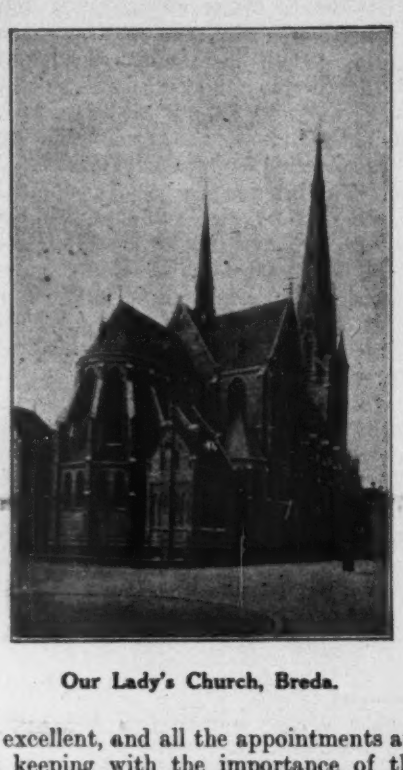
In the commercial capital itself—Amsterdam—some at least of the extremely numerous Catholic churches are very interesting. St. Willibrod's, Amsteldijk, deserves mention in the front rank. Begun in the 'seventies from Dr. Cuypers's design, it has been approaching to completion in structure and decoration up to the present time, but still lacks its intended lantern and corona of towers. Although quite 300 ft. long, and with a 40-ft. wide nave, the building fails to give a corresponding impression of size within. This is due to its relatively inconsiderable height and to the whole fabric being built up from somewhat small units. An unsatisfactory effect, too, is produced by the transept cutting across the seating space, which is carried half-way into the choir, while the sanctuary itself is an annexe of the latter. Altogether there is a want of the wonted unity of effect. Still, it is an impressive building, simply designed on XIVth century lines, with some interesting fittings and decoration. Stone is more freely used than in general, and the foliage carving is excellent. A small but remarkable church is that of the Sacred Heart. Built on an open but very contracted site, the plan shows a central octagon, from which lead out apsidal transepts and chancel and a short nave. The vaulted roofs are lofty, and, outside, the building rises pyramidally to the culminating lantern with its slated spire. The interior scheme of decorated brick is characteristic, but does not in the case form a good setting for the admirable fittings and statuary, all richly polychromed, that lend a special distinction to this church, and must give a wholly new idea of Continental work in this kind to those who only know it by the output of commercial ateliers. The Jesuit Church, in the centre of the city, is of moderate size but great height, and terminates in three lofty apses. Their exuberantly rich furnishings and decoration contrast strangely with an architectural poverty in the rest of the church, where a plaster finish prevails even in features commonly treated in stone. The stained glass is somewhat above the average.

Among lesser towns, Breda, with perhaps 30,000 inhabitants, has raised within the last few decades a remarkable group of churches. The cathedral, one of Dr. Cuypers's early works, shows, apart from its carved and polychromed portal, an extremely simple exterior, which still suffers from the want of its western steeples. The interior, however, in brick and stone, conveys a most stately and

Chancel, St. Willibrod's Church, Amsterdam.

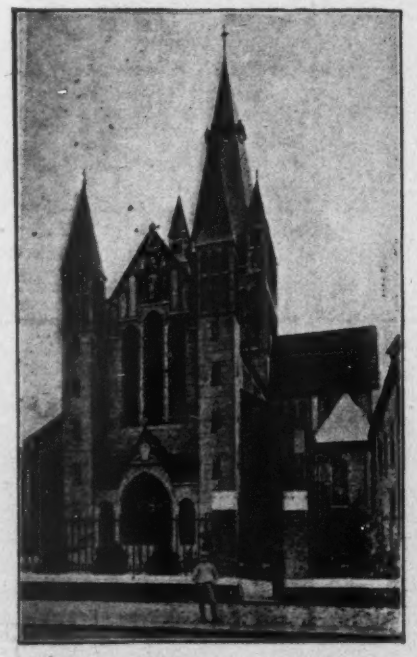
Chancel, Jesuit Church, Amsterdam.

charming impression, and is singularly complete. Its double aisles and five eastern apses give spaciousness and dignity, which are enhanced by the open Rood-screen and the beam above with its five figures. The architectural detail



Our Lady's Church, Breda.

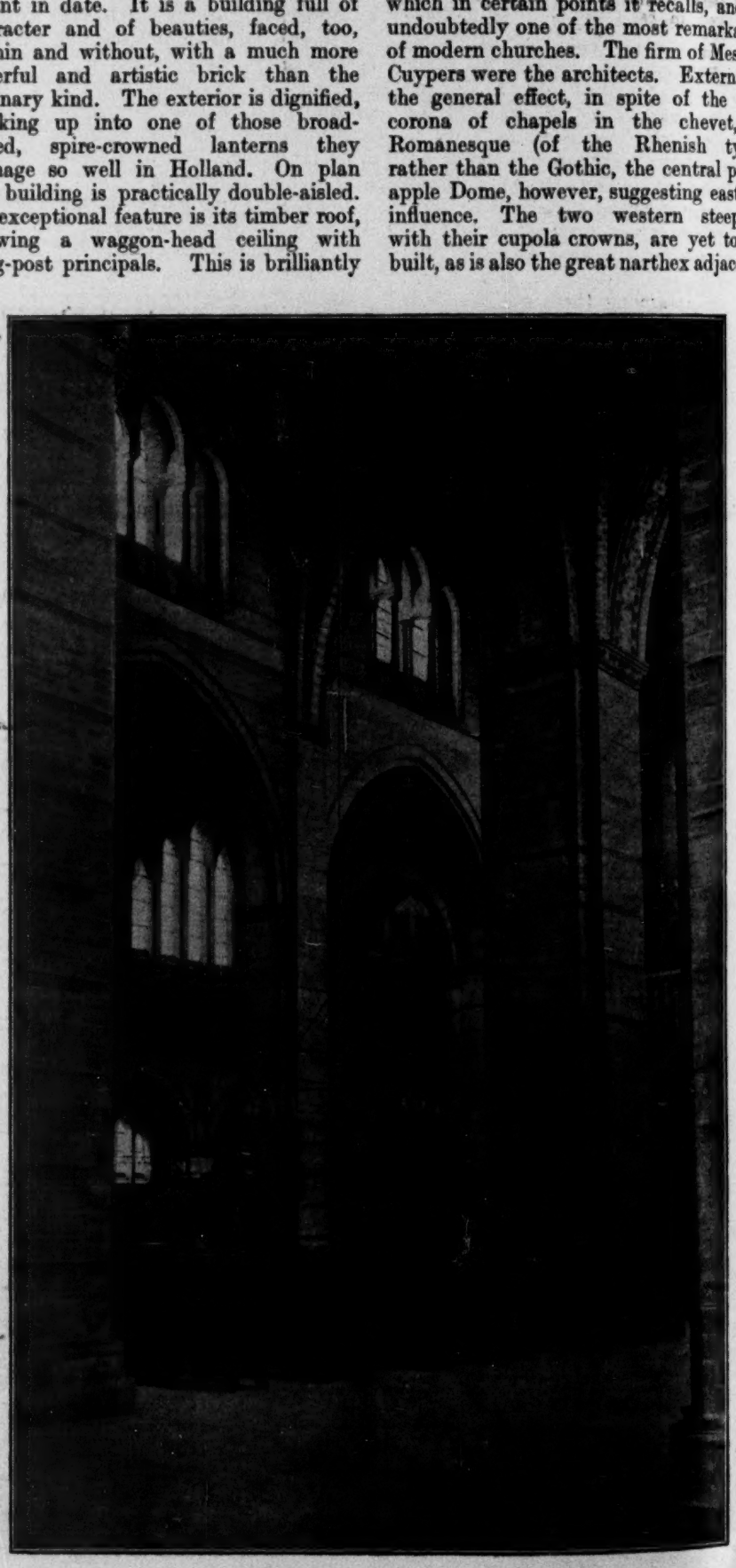
is excellent, and all the appointments are in keeping with the importance of the church and the reputation of its architect. There is grandeur of line, mellowness of tone, and wealth of accessories in this *ensemble*. Its chief daughter-church, that of Our Lady, distinguished by its soaring steeple, has, in particular, a noble interior of lofty proportions, treated on the usual lines. Furniture and decoration are of corresponding interest. One may cite the pulpit sounding-board as a noticeable specimen of a form very



Church, Breda.

common in Holland, one whose prototype may be described as an oyster-shell tilted to an angle of 45 degs. This would seem unpromising from the artistic standpoint, but it is surprising how, duly enriched, especially with colour, such erections become one of the most effective features of these Dutch interiors. The architect of this building—some fifteen to twenty years old—was Mr. Van Langelaere. There are other churches here (one of flamboyant character, not visited inside) of the same family, smaller in scale, but still such as would count with us for large. I must, however, refer rather to the suburban Church of Ginneken, which has the advantage of exemplifying practically the village type and of being quite recent in date. It is a building full of character and of beauties, faced, too, within and without, with a much more cheerful and artistic brick than the ordinary kind. The exterior is dignified, working up into one of those broad-based, spire-crowned lanterns they manage so well in Holland. On plan the building is practically double-aisled. Its exceptional feature is its timber roof, showing a waggon-head ceiling with king-post principals. This is brilliantly decorated in colour on a crimson ground. The Rood is not yet in position, but there is some admirable furniture and interesting fresco work. A fine touch of external colour occurs in the ceramic gable panels of the west porch. Pity that the stained glass should strike a jarring note!

The great cathedral at Haarlem claims a place apart, in virtue of its size (some 340 ft. by 150 ft. inside), its design, and its recency of date. It is a younger contemporary of Westminster Cathedral, which in certain points it recalls, and is undoubtedly one of the most remarkable of modern churches. The firm of Messrs. Cuypers were the architects. Externally the general effect, in spite of the fine corona of chapels in the chevet, is Romanesque (of the Rhenish type) rather than the Gothic, the central pine-apple Dome, however, suggesting eastern influence. The two western steeples, with their cupola crowns, are yet to be built, as is also the great narthex adjacent.



St. Bavon's Cathedral, Haarlem.
(Photo by J. J. Schoulen, Haarlem.)

An earlier project shows gabled spire terminals to both lantern and towers, and perhaps they would on these lines have proved more harmonious with the rest of the work. Minor forms and the detail generally are early Gothic, but in the apexes of the edifice (chiefly) a novel element is introduced—a flavouring of Mauresque (for want of a better term), traceable both in their forms and in their decoration by coloured ceramics and gilding. The experiment strikes one as venturesome. Within, a somewhat, unexpected impression is encountered, the leading lines being strictly and severely Gothic, and showing simple two-story bays of wide and lofty arches (three only in the length of the nave), with massive square-arrised piers and pilasters carrying a brick vault. The conception is one of considerable grandeur; but one feels it a lapse when, on coming to the end of the choir, a sudden change of scale is experienced, and three vertical divisions and seven bays are compressed into an apse of less height than the main body of the building. There is a structural altar at the entrance to the choir in addition to the High-altar on the chord of the apse, but, so far, at all events, neither Screen nor Rood.

The main walling, externally of dull red brick, is within of light buff brick, with double-depth quoins of the same. Upon this surface are introduced ornamental bands, caps, and inlays of glazed ware of a warmer shade, the effect of which is good, but in the Dome especially the detail becomes mixed. Elsewhere occasional plastered spaces are left for fresco. Marbles are used in the coupled columns of the apse, of the nave chapels, and in colonettes generally. Fittings and applied colour decoration have yet largely to come, but the former, so far as executed, appear (excepting in the south transeptal chapel) to be by no means on a par with the building itself. In one of the eastern chapels, indeed, are some figure panels in blue faïence that one can only hope to be of a temporary or experimental character.

In civil and domestic architecture neo-Gothic work does not seem to be much in evidence—much less so than across the Belgian frontier—and it is somewhat singular that the residences attached to the churches are commonly the least successful part of the group. To Dr. Cuypers, however, is due a good deal of secular work in Amsterdam of a modified but still picturesque order, among which must be named the Railway-station and the vast and striking State Museum, which is strongly tinctured with mediævalism—indeed, many features are entirely Gothic. Eclecticism and the *art nouveau* are discernible up and down the streets of the capital; but that modern Dutch architecture does not seem to have declined upon any pseudo-classic bathos is perhaps due to the saving love of the pictorial in form and colour inborn to the race.

W. RANDOLPH.

SCHOOLS, WASHBROOK, OLDHAM.

New schools are to be erected at Washbrook, Oldham, from competitive plans of Mr. H. Kelsale Armitage, of Liverpool. The suite will comprise a hall, primary school, seniors' hall, institute, and classrooms. The cost is estimated at 2,500*l*.

NOTES.

Education of the Public.

A "SYMPOSIUM"—that threadbare device—on colour as applied to architecture in the *New Age* of 16th inst. is redeemed from fatuity by the status and ability of the architects who support it. Short essays are obtained from Messrs. Basil Champneys, Guy Dawber, T. Raffles Davison, M. H. Baillie Scott, and H. Heathcote Statham. All are of considerable interest and show a more substantial measure of agreement on main issues than the "uninformed" nature of the questions put would lead one to suppose possible. Of these gentlemen Mr. Baillie Scott, in an ideal way, and Mr. Guy Dawber, in the realm of immediacy, are the most successful in relating the solutions of this and kindred problems to life and the people of to-day. Mr. Dawber "would like to see Gower-street or Portland-place whitewashed, to get people accustomed to the effect of a light street, and then gradually to introduce harmonious schemes of decoration in colour; but it is essential these should be simple and restrained, and the treatment adopted should be carried through a whole street or block of houses, otherwise the juxtaposition of varied schemes would be terribly jarring. The painter who only does easel pictures would not be suitable for this class of work, and only men accustomed to dealing with architectonic decorative schemes, with special training, would be able to carry it out." This seems to us the right direction if any conscious effort were to be made.

Colour in London.

WE protest, however, against the facile assumption that London is an entirely dingy place of drab and gloom. In fog and February it may be—what place in a London winter would not? But those who will wander with their eyes on a sunny day through the stuccoed districts, through Bayswater, Belgravia, and Pimlico, may see such harmonies of ochre, cream, and crimson, with an occasional olive green, all in the binding solution of necessary grime, that they will swear there is no colour like London colour, even in the matter of her architecture. In this respect London is undoubtedly unique, and at no very distant date, when they are beginning to pull down the stucco streets, so hideous, and even tragic, in their heavy associations, some artist will come just in time to sketch a corner on which the sun plays, and wake the purblind public.

Bishop Gore's Address to Architects.

THE Bishop, if one may judge from the frequency with which laughter greeted his observations, seems to have delivered an amusing address to the Birmingham Architectural Association last week, and doubtless many of the little points on which he dwelt—concerning the altar rail, seating, and arrangement of the pulpit, to extract at random—are matters which ought to occur to the designer of churches, especially one who will put himself in the place of the parson, but who sometimes does not. The suggestion that there should be attached to every church its architect's design for its gradual beautification, cannot but meet with our approval. And Bishop Gore appears to walk in that strong faith which need not fear to raise a laugh over oddities in its machinery of transmission. But there is a sentence in the Report before us (from the *Birmingham Post* of 18th inst.) which, if it be true, vitiates anything the Bishop, a high officer in the Catholic Church and a chief custodian of her tradition, may have said. "Having predicated," the Report runs, "that it was more important that a church should serve the purpose for which it was built than that it should be generally beautiful. . . ." For what purpose, then, are churches built but that they should be generally beautiful? Is the Church slipping from her Rock?

THE NATIONAL PORTRAIT SOCIETY AND THE MODERN SOCIETY OF PORTRAIT PAINTERS.

THESE two exhibitions have indicated the beginning of a new era in English portrait painting. For, although there are foreign names and methods at the National Society's exhibition, the predominant work is by English painters; and the work at the Royal Institute galleries is entirely, we believe, by men of native birth, even if here and there the names suggest other origins. But if we take the stamp and character of the portraits as a whole, the insular individuality (to use merely a geographical distinction) of the National Society's exhibition is perfectly obvious when contrasted with the paintings of foreigners of such different temperaments as, say, Gandara and Leo Samberger on the same walls. Through some cause or other (we hesitate to indicate it precisely at the moment) the breath of life would seem to have been infused into British portrait painting. Here the young man is with us, and he is doing valiantly. He is knocking at the door; he is knocking over the standard of the stereotyped article with which we are so familiar at the Academy. Orchardson, with all his fame, with his amazing ability, would scarcely stand the test of the life and vitality, the keen observation and frank expression, which confronted us here and there from the walls of either of these exhibitions. It would, of course, be absurd to suggest that this delightful expression of animated and vigorous art is the natural evolution of artistic production bred and born on its native heath. Far from it. The spirit of eclecticism is plain everywhere. You can trace, if you think it worth while, Spanish, French, Italian influences. Neither exhibition is, however, of the post-impressionist order which denies itself a tradition or a history, or seeks it in a too elemental stage of civilisation. Nothing particularly bizarre appeared in either exhibition. The health of this new spirit in portraiture seems to us largely to exist in the fact that the thought behind it is essentially of national origin (notwithstanding the influences), and that it is largely the thought of young men, the men of to-morrow. Old stagers may protest that few of these portraits are commissioned. Undoubtedly so. But the client is always with us (at portrait shows) and on the present occasion we may be grateful for his absence. Architects know that many of their best castles have been built in the air; that the client, whether as a public body or an individual, is an influence that does not always make for good. Trammel the natural artistic impulse of a man even by so much as the bait of a choice commission with which he is not in sympathy, and you will not get the best that is in him. There is no need to labour this point in any comparison

between the arts of architecture and portrait painting. But the client, after all, is a susceptible person, and he necessarily counts. The advantage of the present shows is that they may teach him something. The friendly animation, the pleasant individual feeling, the pictorial distinction, let us say, by which one is surrounded either in the Grafton-street or Piccadilly exhibition, will not, we hope, leave him untouched. The usual Academy portrait will, perhaps, have lost something of its savour afterwards. It may seem a little tame. Even if our prospective sitter be an unlikely subject chosen by some public body for pictorial treatment, he may vaguely realise that perfect artistic frankness is more calculated to perpetuate his memory than the complacent indifference which pays him an empty compliment for a handsome fee.

The importance of these exhibitions seems to us so great that we have chosen rather to dwell upon their general tendencies than the particular pictures.

COMBINED ORDINARY GENERAL AND CAMERA, SKETCH, AND DEBATE CLUB MEETING.

A MEETING of the Architectural Association was held on Monday at No. 18, Tufton-street, Westminster, S.W., Mr. Arthur Keen, President, in the chair.

The minutes of the last meeting were read and confirmed, and some nominations read.

The following gentlemen were then elected as members :—Messrs. W. H. Lamb, Shepherd's Bush; D. L. Meiklehem, New Southgate; W. G. Parkin, Bloomsbury-square; and E. P. Trench. Mr. C. E. Simmons was reinstated as a member.

Mr. E. Gunn, Hon. Secretary, made the following announcements :—A combined meeting of the Camera, Sketch, and Debate Club with the Junior Art Workers' Guild, on March 9. Subject to be announced. Third spring visit on March 4 at two o'clock, to the Recruiting Station and Stables, Whitehall, by permission of H.M. Office of Works. Members to meet at the building.

"THAT BRICK IS EMINENTLY SUITABLE FOR LARGE TOWN BUILDINGS."

Mr. W. G. Newton then read a paper on this subject, in the course of which he said :—

Introductory.

"You will appreciate, Sir, the diffidence with which I address a meeting like this on the subject of brickwork. Your practice is, as your list of sessional papers shows, to ask experts to open discussions on those subjects with which they are particularly intimate, whether it be Professor Lethaby on Greek building, Mr. Gerald Horsley on draughtsmanship, or Mr. Gill on the architect as an artistic failure. Now, Sir, the most affectionate partisan would not accuse me of knowing anything at first hand about brickwork or about large town buildings. I can only hope that I shall be able, in a general survey of the subject, to suggest lines of thought and points for discussion to those whose experience is greater.

Nor am I altogether sure that I understand the title of this paper. When we remember that brick has been the substantial material of so many London buildings—from St. Paul's to the latest stone-fronted shop in Kingsway—are we to consider that the purpose of this paper is to reaffirm the building principles of the last 300 years, as opposed either to a revival of small-stoned Gothic architecture or to the use of ferro-concrete? I think that you would consider it a quibble were I to interpret my title in that way.

I shall take it that the subject we are discussing to-night is the subject of the use of brick as the "unit of construction" in large town buildings. And we shall find that this subject has two aspects :—

1. The properties of the brick as affecting the design. Its colour, texture, and shape. This is the brick considered *actively*.
2. The properties of the brick in itself. What John Locke would have called its *primary* qualities. Its power of resistance to attack. This is the brick in the passive voice.

This second aspect is concerned with the body of the building, the first with its soul.

Historical Survey.

ASIA.

It is, I believe, customary to begin such an historical survey with the Tower of Babel. It is at least evident from historians and travellers that the great Central Asiatic civilisations built with brick. Herodotus's account of the building of Babylon, with its kiln-burnt bricks, can be verified to-day. Nor were they used only for the great walls, with their houses and carriageway along the top. The Palace of the Kings also, which remains even to this day as a square of 700 yds. in length and breadth, is a great "pile of brickwork, chiefly of the finest kind." No less do modern travellers find half sunk in the drifting sand on the Afghan frontiers of Persia the brick walls and domes and tombs of cities of a thousand years ago. The bricks at Zaidan are partly sun-dried and partly kiln-burnt. Probably they were all covered originally with mud or stucco; perhaps painted in bright colours, like the seven walls of Ecbatana.

EGYPT.

With Nineveh and Babylon we are accustomed to associate bricks. But they were perhaps hardly less common in Egypt. "The use of crude brick" (I quote from Canon Rawlinson's Notes to Herodotus) "was general in Egypt for dwelling-houses, tombs, and ordinary buildings, the walls of towns, fortresses, and the sacred enclosures of temples. Even some small ancient temples were of crude bricks." And Herodotus tells us that the King Asychis, "desirous of eclipsing all his predecessors on the throne, left as a monument of his reign a pyramid of brick. It bears an inscription cut in stone, which runs thus :—'Despise me not in comparison with the stone pyramids; for I surpass them all as much as Zeus surpasses the other gods.'" It was built of bricks made from lake mud.

ATHENS.

Athens after the battle of Salamis was largely built of sun-dried bricks, as we may infer from the fact that Themistocles' hurriedly-built city walls were of this material (except the lowest 4 ft.), and that for these walls, as Thucydides tells us, private houses and public buildings were recklessly demolished. But the Greeks seem to have been in the habit of covering their brick walls with a fine hard stucco made of marble dust. So fine and good was this that Vitruvius tells us the Romans of his day would use slabs of it, cut from old Greek walls, as tops for tables or sideboards.

ROME.

It is the hackneyed boast of Augustus that he found Rome brick and left it marble. It must be remembered in this connexion that the Roman brick which is the admiration of the archæologist was a product of the Empire, and the only brick familiar to Vitruvius would seem to have been the sun-dried brick. M. Choisy, in his new and excellent edition of "Vitruvius," says :—"In Vitruvius's time the brick hardened in the fire is practically unused." Vitruvius describes three kinds of brick as generally used in his day. Two kinds are square. They are Greek, and are respectively 4 and 5 palms in length. The smaller were used for private buildings, the larger for public. The third kind is the Roman brick, and oblong. For an unexplained reason it is called the "Lydian."

But, after all, Vitruvius was dead before Roman architecture began—the architecture of brick and concrete which the legions were to carry with them to the Euphrates, the Rhine, the Forth. And the Roman brick, which Vitruvius had hardly seen, is familiar to the least erudite country parson.

Early English Brick-making.

(*a*) AGAINST.

How far the art of brick-making died with the Roman Empire, at least in the more barbarous regions of Europe, such as our own country, is a question which well deserves consideration. It was for long the accepted theory that no buildings were built of brick from the time of the Roman occupation until the reign of Henry VI. This position is adopted almost as a postulate by the XVIIIth-century writers in the earlier volumes of "Archæologia," and Grose in his "Antiquities" writes thus of Hurstmonceux Castle :—"This castle is built entirely with brick; and it is one of the oldest edifices of that material in this kingdom *since its disuse* after the Romans left the island."

Doubtless there is much in favour of this theory. The Saxon settler, as is pointed out by Mr. Hudson Turner, probably added very little to the buildings of the country. There is on record the express statement of the inhabitants of London that down to the reign of Stephen their houses were built of wood and thatch. There is no documentary evidence of brick building of an early date. And there is not to be found in England a building earlier than the last half of the XIIIth century of which the material is a brick which can be definitely pronounced to be other than Roman.

So far, then, we have seen that there was no very strong reason why the Saxons or Normans should have made bricks, that there is no evidence of existing remains to show that they did make them, and that there is evidence that they were driven to use Roman bricks.

(*b*) IN FAVOUR.

At the same time there are many strong reasons for qualifying this position. In the first place, it is *à priori* improbable, as is pointed out by Mr. Hussey in "The Glossary of Architecture," that so simple and useful an art should ever have been lost. The necessity of providing tiles would surely have preserved the art of making them, and bricks are not more difficult. Moreover, it seems indisputable that tiles were manufactured in the XIIth and XIIIth centuries. In the year 1289 the Constable of the Tower of London made a yearly profit of some 7*l.* by selling the clay taken out of the enlarged moat to certain tilers in Smithfield. The name "Wat Tyler," again, seems to indicate the persistence of the calling. And as early as the year 1189 a series of disastrous fires had roused the citizens of London to seek for some method of protecting their mud walls and thatch, and one of their expedients was a close-set covering of tiles.

Early Bricks in North Europe.

And if there are few evidences of early brick building in England, some parts of North Europe are rich in them. Mr. Chantrell in the R.I.B.A. *Transactions* for 1855 reviews the brick fortifications, church, and town hall of Damme, in West Flanders, of which the first are at least as old as 1380. Even older are the brick churches of Pomerania—churches of great size, many of which are wholly of brick and have brick-vaulted roofs and immense brick mullions. These go back as early as 1311. And on the Baltic coast (where the great confederacy of the Hanseatic cities was developing the commerce and laying the foundations of the prosperity of North Europe) we find the mention of brick as the ordinary building material as early as 1209, when a Building Act was passed after a great fire at Lübeck to ensure that at least the two gable-ends of the houses should be of brick. And these bricks must

have been of contemporary manufacture. Roman civilisation never established itself on the Elbe.

Conclusion about Early English Brickwork.

It seems, then, reasonable to suggest that the practice of brick-making in England, once initiated by the Roman settlers, never died, though in the course of centuries the type degenerated. The bold frankness of the brickwork in St. Alban's Abbey tower seems to suggest the work of men not unfamiliar with brick, though the materials they used were the Roman bricks of Verulamium. By the end of the XIVth century, at all events, there can be little doubt that brick was extensively used. In 1382 Michael de la Pole built a great brick house at Kingston-on-Hull and enclosed the town in a brick wall, of which material most of its houses were already built. And we have preserved the building accounts of the North Bar at Beverley, which give a number of names of brick-makers. The date is 1410.

The Spirit of the Brick Builders.

These are town buildings. Now, with the growth of a strong central Government, man dares to leave walled towns and live alone, and the next two centuries turn castles into homes and see the rise of something which the world had never seen before, the English manor-house. It is a period of the greatest significance to the student of brick architecture, a time of the building of East Barsham and Layer Marney, Sutton Place and Bramshill, a time when our country-side was endowed with that grace of stately playfulness which is so peculiarly its charm. But they are irrelevant to our present purpose—the discussion of town building.

And yet the spirit which informs the manor-house informs no less the Inns of Court, of whose

> "Bricky towers,
> The which on Thames broad aged back doth ride,"

Edmund Spenser writes. And I think it will not be unprofitable to spend a moment analysing the temper of this great brick century, the XVIth; for so long as we are consciously artificial designers we are using forms of expression that have already been used in the past, as a musician might use an old theme; and it is surely important that we should not use such old themes uncritically.

It is interesting to speculate what would have been the effect on English architecture had she remained officially a Roman Catholic country. The outcome of the divorce of Catherine was to limit in a large degree the intercourse of England with Europe. Italy, Spain, and the Southern nations are kept more at a distance, and England turns gradually to the north-west of Europe and the self-emancipating Netherlands. And the architectural importance of this is great. In the first quarter of the XVIth century the builder, catching the new manner, seems, with his cupolas and "glistering gold," to be building a palace for some Venetian merchant prince or Eastern monarch. Nonesuch and even Hengrave are almost Oriental. And Venice, if she was the front-door of Europe, was also the threshold of the East. But out of that strange welter of old traditions, of which a single corner of Hengrave, with its Eastern cupola, its Flemish bricks, its mediæval rain-water spout, and its twisted chimneys, is so apt a summary, the English building instinct emerged, and, helped by political forces to shake itself free of that Eastern lavishness, which was least its natural expression, strengthened and solidified upon essentially English lines, and found itself able to deal in its own way with the more spacious ideas and the almost new building material, which were its heritage from the cosmopolitanism of the Tudor period.

The English building instinct passed thus into the sane serenity of Wren and the XVIIIth century.

Question of Plastered Bricks.

There is another point of interest in a consideration of design in brickwork from an historical point of view, and that is the question of concealed brickwork. It would, indeed, almost seem that it was only in the XVIIth century that it began to be considered normal to rely on the texture and colour of the material and to build in bare brick. I doubt if it is generally realised how far mediæval buildings were covered with plaster or whitewash. But that such treatment was not abnormal for a building like Old St. Paul's is evident from Wren's report to the King on the suggested repairs of the cathedral before the Great Fire. "Some," he writes, "may fall so low as to think of piecing up the old Fabrick here with Stone, there with Brick, and Cover all Faults with a Coat of Plaister, leaving it still to Posterity as a further Object of Charity"; where he is evidently deprecating the patchy nature of the work, and not the use of a coat of plaster in itself. A fortnight ago we heard Professor Lethaby, whose mediæval researches are as profound as his Greek, shuddering at the bareness of uncovered brick and stone. I think that there is little doubt that Hengrave and East Barsham Manor (to take two examples) were covered with whitewash or plaster, and possibly enlivened with gold and colour. Many names of places, such as Whitechapel, add force to the suggestion. And that it was the Greek and Roman manner there is not the least doubt: we have already seen the Roman using Greek stucco slabs for his dining-room table.

Endurance of Brick.

Now that we have taken a general survey of the methods and of the ideals of those who have built with bricks in the past (if I may call so hasty and imperfect a summary a general survey), I think we are in a better position to consider the future. If we know what has been done we shall attack with more confidence what is to be done.

You will remember that I wished to consider the brick under two aspects, its primary and its secondary qualities. Let us take the primary qualities first, and deal with the brick in what I have called its passive voice, its power of resisting outside attack.

Is Endurance Wanted?

"Architecture aims at eternity," writes Sir Christopher Wren; and if this is so, the primary qualities of the material are important. It may, of course, be objected that the essence of a modern town is its fluidity, the ebb and flow which leaves the riverside mansion of one generation among the factories and warehouses of the next, as in Bermondsey. But the rise of definite schemes of town planning will to some extent obviate this, and in any case we can hardly hope for a worthy town architecture if we deprive the architect of the incentive of futurity and deliberately expect our banks and schools, our fire-stations and town halls, to moulder away in half a century.

We have, then, from the point of view of permanence, to compare brick with other materials. And here I should feel justified, on the authority of Palladio and Mr. Blomfield, in considering terra-cotta as brick. "Stones are either natural," says the former, "or artificially made by the art of man. The Stones artificially made are commonly called Bricks." Moreover, terra-cotta has the alumina, silica, lime, and magnesia which are characteristic of brick, and in much the same proportions.

Design in Brick.

But endurance is not all we are looking for; though we had to our hand the adamant of Hades, we should not unhesitatingly build our towns with it.

The question before us is how far brick is a suitable material for large town buildings. And we have seen that this practically resolves itself into a question, so far as surface matter is concerned, between brick and stone. The use of concrete or of steel exposed is not general enough to warrant serious examination, though I may perhaps in passing quote from Mr. Fergusson's "History of Modern Architecture" the passage where he is discussing the newly-built Crystal Palace. "Though stone," he says, "may be inappropriate, brick and terra-cotta may be employed with iron and glass with the very best effect. When so used the brickwork must be of the very best quality, so as to be pleasing in itself. Coloured bricks should be employed everywhere to give relief and lightness."

It is, then, a question between brick and stone. Let us take a brief survey of stone as a material of design.

Design in Stone.

(1) GENERAL.

There are two ways to build with stone. The one is to build with small stones, as did the mediæval builders; the other is to build with the largest stones we can get, as did the Mediterranean civilisations, whose heirs we are. Of these, the former almost merges into brickwork; indeed, many of the Gothic revivalists acknowledged this by their work, as may be seen in a walk round the London churches built by Street, Pearson, or Butterfield. At the same time, such mediæval work has the essential difference of carved ornament where stone must be used. The ornament of brickwork is either moulded or a patterned arrangement of bricks. This, I think, is essentially so. The XIVth-century innocence which chisels the brick niches of Beverley Bar, no less than the delicate Renaissance skill which carves the Cupid's heads in the rubbed brickwork of the Enfield House (now in the Victoria and Albert Museum), emphasises the truth that carving should be on stone. I am inclined to think that this mediæval method of building with small stones is the only logical method to-day.

But, certainly, it is not the method we have chosen. We rather go for our architectural forms to those dead civilisations whose resources and whose ideals were so different from ours, to Athens, who could quarry her temples from Pentelicus, or to Rome, whose building materials were the spoils of a world. Bramante can find cornice stones (a little small, it is true) for his portico at St. Peter's, with its 9-ft. diameter columns. Wren is long delayed for the cornice to his order, which is less than half the size. And, as a result, we use a form of building where the whole system of the proportions is based on the size of the stone for cornice and lintel, while we vitiate that form by stringing small stones across the lintel, or building up our columns of discs, like so many draughtsmen, as in the Madeleine at Paris.

(2) DETAILS.

But there are many to whom the abstract logic of design will not appeal. To them I would suggest that our use of Roman and Greek mouldings is hardly defensible. We use shapes that were designed to give an effect of glowing depth or stark delicacy under a searching sun; and we deliver them over to our weather, to wash them unevenly with its rain, to scour them unevenly with its south-west wind, to paint them unevenly with the velvet black of its carbon. If we are going to build in stone, ought we not to take account of all this, to arrange our angles and to design our mouldings so that the rain and wind may burnish those parts which we want white, and the smoke paint here and there a darkness which no Greek temple could attain? This would ask an amount of logical thought and experimental study, and perhaps the result would be theatrical. At least it would only be suited to something monumental, some great tomb or bridge or gateway.

Zeitgeist.

But we live in an equable and kindly, rather than a monumental, age. What are the large buildings we build in towns? Not a Pantheon, rarely a cathedral; even Newgate Prison is gone. For us, large town buildings are offices and banks, flats and elementary schools, theatres and fire-stations, town halls and public libraries. It is the immensity of our towns that is monumental. No one can have looked down unmoved upon Birmingham from the G.W.R. embankment. And I feel strongly that the note we have to strike is not a note of awe and grandeur. We live in our great modern cities as our ancestors lived in the great forests. I think you cannot walk down Cannon-street or look over the endless roofs of Tottenham without feeling rather frightened. Our cities are great. Cannot we make them less terrible? There is a gracious homeliness about brickwork—what Charles Lamb calls "a cheerful, liberal look." We feel it in the Temple, in Gray's Inn, in Westminster.

For our theatres and palaces of commerce we may use glazed bricks, beautiful as a de Morgan tile, and imperishable; probity is to be found in small things, and I would distrust a firm that hangs a porphyry lintel to

a rolled steel joist. We may use salted bricks, or rubbed bricks, which laugh at acids; we may fill our palette with red from Fareham, with blue from Staffordshire, with white from Suffolk, or with the rose and purple of the weathered London stock. Texture, no less than colour, is ours. With glazed bricks and rubbed bricks, with recessed joints and lime cream, and with all the varieties of bond, what may a clever man not achieve?

Conclusion.

It is then on three grounds that I base the claim of brickwork in town building. Historically we see that the great building ages have not disdained it; that, moreover, it is essentially an English material in that it was being used most surely and most vividly just when the English genius, cut off from Italy, France, and Spain, was most surely itself. Chemically, we see that we can, by processes of manufacture, by selection of material, by careful burning, perhaps by glazing, produce something more enduring than Nature gives us. Most important of all, brickwork, in the hand of a master, may have a serenity and a kindliness which our great towns so conspicuously lack.

We are building for the future; but we still have our roots in the past. Mr. Wells prophesies that we shall live as intellectual insects amid an intricacy of glass and steel. On a large view I wonder how far it is sound for man to project such a shadow of himself on to the screen of the future. I believe the man of the XXXth century will have less in common with this anæmic abstraction then he has with Dickens or Herodotus; that he would rather walk with Charles Lamb to the Old South Sea House or the Temple than aviate with Mr. Wells amid the colossal perfection of some newer New York."

Mr. Alan Snow,
in opening the debate, said that the architectural world was now practically agreed that geometrical planning was desirable in large towns. This, with its angles, long lines, and curves, required geometrical elevations, depending for their effect upon continuous horizontal lines, such as string courses, cornices, etc., perhaps varied, but to a very limited extent, by gables, or a small group of vertical lines. This could not be so well done in brick that it could not be better done in stone or some other material. It was not possible in brickwork to ensure that these lines should be strongly enough marked, sharply enough defined; they lost themselves too soon in the distance. Neither was it possible to give to the projections the boldness, and to the enrichments the clear cut expression, that was necessary for the attainment of true dignity and beauty. Who would dare assert that the intended purpose and effect of a cornice or string course was as well realised in brick as in stone? Did any one really hope to obtain the beautiful effects of a long length of curved moulding when he must construct even its simple curve in two or three horizontal divisions, or else make it so small as to be without effect? Were such shapes, indeed, natural to brick at all? If we adopted it as our material, were we not, at the very beginning of our building, confessing that it was unsuitable by embellishing it with forms evolved in another and larger material? The small unit it was that warred against the desired effect of mass and dignity; it was out of scale, and was only successfully used in subordinate positions; in buildings where the principal lines and effects were due to the use of stonework or some other material. Suppose, then, we did without these foreign forms. Suppose we built our town building six or seven stories high and several hundred feet long, entirely and naturally of brick. What was it going to look like? What was going to happen to it? Perhaps we might rely on texture and beautiful colour. Warmth of colour and variety of texture were the distinctive qualities of good brickwork, but these same qualities, which were amongst the chief reasons for the revival of brickbuilding in our country work, could not be relied upon in our large towns. The brick was either a hard and repellant material or its surface made of it a natural collector of soot and dust, which were inevitably present in all large towns, and which adhered to the brickwork and in time became ingrained in it, and our once beautiful piece of colour became dull and of a drab monotony. Perhaps we might go further than simply to rely on colour and texture, and aim at obtaining effect by pilaster or panel treatment, but could one finish this at the top in a satisfactory manner? And what was one really aiming at? Effects of line, obtained by shadows cast by one plane upon another, and here, just as with the horizontal lines, the material would prevent one from really gaining one's end. One could not get the lines sufficiently defined owing to the joints and, worse still, the shadows were dulled and spoilt. Here we came up against one of the chief objections to the use of bricks in towns. The dull surface to which they so rapidly attained was incapable of reflecting light, and, indeed, might be said to absorb it. Large town architecture required a larger treatment than brick would allow of; the best possible effect must be aimed at, and would not be obtained by the use of brick. Large masses of brick in a town became dull and monotonous, and we could not give the brickwork that natural setting of green trees and blue sky, against which it looked so fascinating in the country. Where, they might ask, came in the familiar Georgian buildings, old and new, which we all admired so much? Well, he considered them as eternal proofs that brick was not suitable, for were not all the effects which combined to make up their charm obtained with other materials? Was it not with the stone or wood cornices or quoins, and windows and doors of painted wood or iron? In conclusion, he maintained that brick was not an eminently suitable material for large town buildings, because with it the necessary and proper effects for town architecture could not be achieved; because it did not retain its inherent æsthetic qualities, and acquire no others; and because it was possible to construct as efficiently, and often more efficiently, with other materials.

Mr. H. F. Murrell and Mr. G. Fildes having spoken,

Mr. Herbert A. Hall
said stone, especially Portland stone, was a national possession, and should not be squandered as it was on some designs. The use of brick or stone depended somewhat on whether one was building in the country or in town. In the country, in the midst of trees and fields, one did not want to assert one's individuality as boldly as one would in a city, but rather to work in subordination to nature. In the country one used the less assertive and more gentle material, *i.e.*—brick, and stone seemed the more suitable for towns. He disliked the way brick and stone were used together in panels sometimes, brick being surrounded by stone as a frame. When brick and stone were used together, the poorer, or the less expensive, material should be used in a secondary position. Sometimes one saw brick lines running through stonework, and that seemed very weak.

Mr. D. R. Forster
said that one point not mentioned in favour of brick was its fire-resisting qualities. No material was better suited to resist fire. He thought stone was as much a collector of dirt as brick.

Mr. V. R. Talvalker having spoken,

The Chairman
put the vote of thanks to the meeting, and said he could not agree that terra-cotta could be claimed as brickwork. It partook of the nature of brickwork in that it was of earth and was burnt, but there the resemblance ended, for, so far as architectural expression went, terra-cotta partook of the nature of stone rather than of brick. There was as much difference between terra-cotta and brick as between marble and stone; they would not class marble as stone. Mr. Newton suggested that it was not until the XVIIth century in England that brickwork was regarded from the point of view of its colour, texture, and that kind of thing, and that before the XVIIth century brickwork was whitewashed and plastered over. It was certainly true there were many instances of brickwork long before the XVIIth century in which one found imitation coigns made in plaster, imitation stone mullions, jambs, etc., built in brick but plastered with the joints broken exactly in the fashion of stone coigns? But in early brick buildings prior to the XVIIth century one commonly found brick diaper work used extensively; the early part of Hampton Court was an example, where the main part of the ornament consisted of brickwork. There was no doubt that in the early times both stone and brick were plastered over and whitewashed. They all knew that brick was a good building material, and the general question should have been argued from the architectural standpoint all through. A good point was made by Mr. Snow when he said that the architecture of cities presupposed the use of horizontal lines, which could not be got in brickwork. In English brick architecture of later periods, where there were oversailing eaves cornices, they were practically always made of wood and stone, and if they were built out in brick quite contrary to the nature of the material, they were smaller projection and not effective. The word "large" was used in the title of the subject, and small material like brick did not seem suitable for large town buildings. He always thought of Leicester Town Hall when he thought of brick buildings; it was one of the best brick buildings in the country, but there was a large amount of stone used in that building, and the stone owed a great deal of its value to the fact that it was contrasted with the brickwork. But that was hardly a fair case, as Leicester was a pleasant, quiet, homely, old-fashioned town as compared with Manchester, and the larger provincial towns, or London. Mr. Newton made rather a point of weathering and smoke on stone buildings, and the most valuable effects were obtained on London and other buildings from the action of smoke and rain. There were two or three of Wren's London churches built of brick, but not one of them was treated in what one would call the architectural sense. St. Benets was one of the most delightful buildings in the world, but it was not what one would call an architectural building, essentially picturesque and homely though it was. St. Mary Abchurch was a quiet, homely, domestic building, which was not treated in a strictly architectural way; and St. Mary-le-Bow, remarkable building though it was, did not conform to one's ideas of city architecture. As Mr. Hall said, the test of design was fitness, and what we had to do was to find the most appropriate material for what we were doing, and if we built in the country brick seemed appropriate; while if in the town, for monumental work a more handsome material seemed desirable. A great deal of dignity and importance could be got out of brickwork, but not in the same way as with stone. A good effect could be got in large wall surfaces with few parts, but the effect was lost when the wall was broken up, and in cities that was necessary. The right treatment of brick was arch construction, and that was not suitable in town buildings.

The vote of thanks was heartily agreed to.

Mr. Newton,
in reply, said he wondered what the shades of Wren thought of the statement that half the effect of St. Paul's depended on atmospheric effect. If we were to lay emphasis on the value of those effects we ought to arrange our mouldings and angles, and projections so that the weather would emphasise the points we wanted to emphasise. He could not follow the Chairman's distinction between a building and an architectural building. Any building which had the effect upon one's mind that St. Benets had upon the Chairman—any building which could stir the emotion was an architectural building. On the three claims he made for brickwork—the historical, chemical, and artistic claims—he advocated the use of brickwork in large towns.

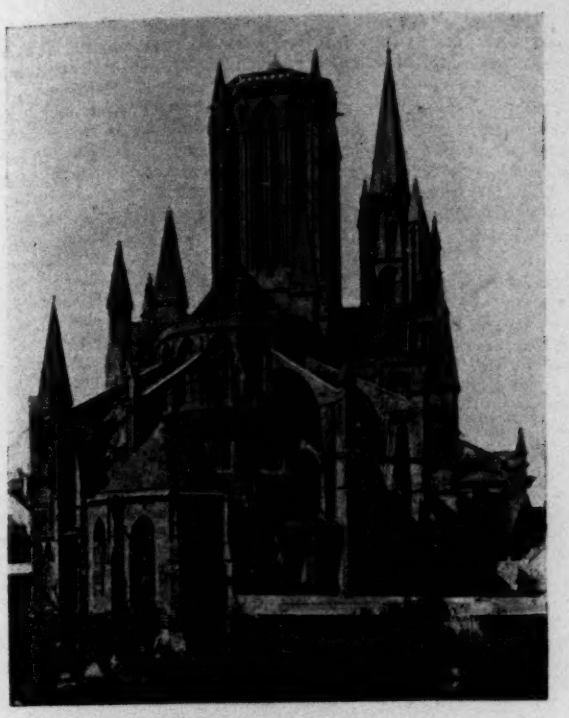
The President announced that the next meeting would be held on March 6, when a paper by Mr. A. R. Jemmett, F.R.I.B.A., entitled "The Functional Application of the Orders to Modern Buildings," would be read.

The meeting then terminated.

BOOKS.

The Antiquary. Vol. XLVI. 1910. Crown 4to., Half Rox. 7s. 6d. (London: Elliot Stock.)

THE forty-sixth volume of our contemporary contains much information of general interest, and not a little of special interest, to our readers. It contains able articles by Mr. J. Tavenor-Perry, Mr. Alfred C. Fryer, F.S.A., Mr. R. Coltman Clepham, F.S.A., Mr. E. Wooler, F.S.A., Mr. J. Harris Stone, M.A., and others, while the contents include interesting notes and reviews, and a good many illustrations. The volume is well printed and bound, and we have pleasure in calling attention to it.



Coutances Cathedral from the East.
(From "The Cathedrals of Northern France.")

Evreux Cathedral, Nave looking East.
(From "The Cathedrals of Northern France.")

The Homeland Handy Guides to Clevedon (Somerset), Wokingham (Berkshire), and the Western Mendips. (The Homeland Association, Ltd. Price 3d. each.)

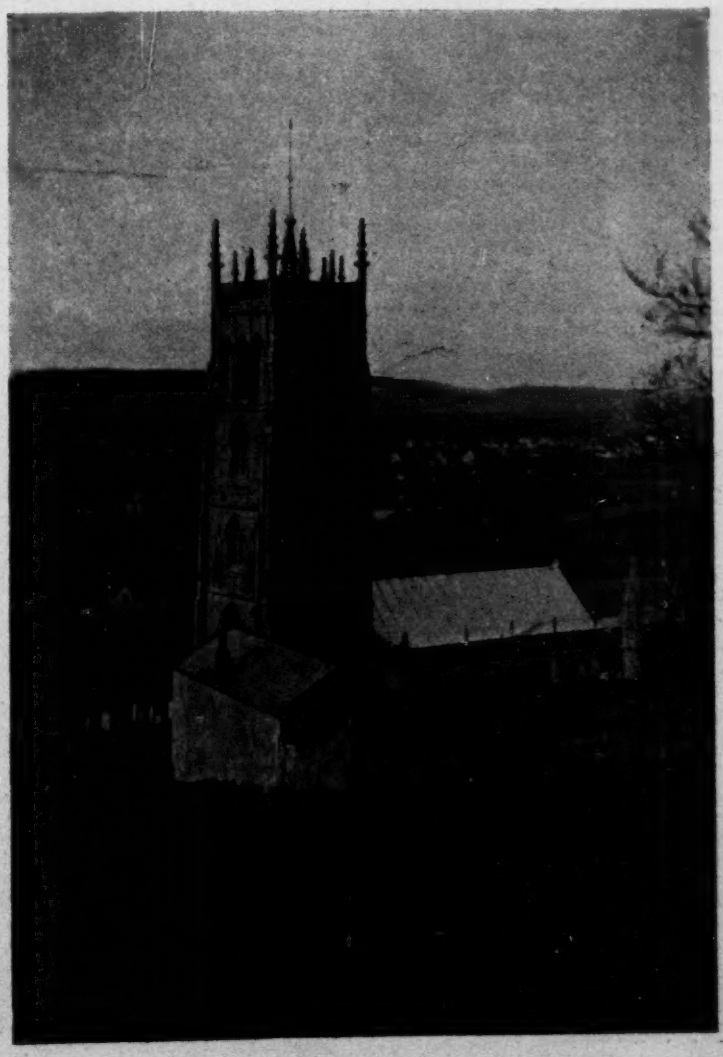
THESE little books are Nos. 19, 21, and 22 of the series, issued for the encouragement of touring in Great Britain, of what promises to be a very fair survey, from the popular point of view, of the whole country. They purport to guide only to the "interesting" towns and districts of the kingdom. But the term is capable of infinite extension, and the visionary spectacle of some northern factory town dubbed uninteresting lacking its "handy guide," chagrined, and rising in protest, is alluring and would be hopeful. The amount of definitely useful information they contain—much in the form of legitimate advertisement—combined with the system of annual editions makes them, if not indispensable, at least highly desirable little works for the traveller. The photograph we are enabled to reproduce is of the exact size, and gives a fair idea of the views, many of architectural interest, scattered among the thirty or so pages of each guide.

The Cathedrals of Northern France. By T. FRANCIS BUMPUS. (London: T. Werner Laurie, Clifford's Inn. Pp. 396. 6s. net.)

THE cathedrals described in this volume are, to quote the author, "those included above two lines drawn across the map of France, from the mouth of the Loire to the Allier, and thence to the Ardennes. . . . The descriptions of the Breton cathedrals of Rennes, Quimper, Saint Brieuc, and Vannes are deferred for the present." And only those cathedrals which are actually the seats of bishops at the present day are included, such buildings as Auxerre, Laon, Lisieux, Noyon, Senlis, and Saint Omer being therefore omitted. The cathedrals dealt with are grouped in their respective archiepiscopal provinces, and are not arranged in chronological order, as that, says the author, "would have been to impair the usefulness of the book as a touring companion." As the author says, we do not all see with the same eyes, nor reflect and judge with the same minds, but few will disagree with him when he refers to Amiens, Rouen, Rheims, Bourges, Tours, and Chartres as six of the noblest Gothic edifices in France. And in this matter of seeing the author has used his eyes to advantage, for his interesting and sometimes eloquent pages exhibit considerable powers of observation, though they are somewhat lacking in analysis. He has an excellent explanatory style, and rarely fails in his descriptions to express his meaning clearly. He has endeavoured to fulfil the part of a pioneer, and has produced a volume which is well suited to the requirements of the cultured layman, and will often be of service to the architectural reader.

Preceding his description of the cathedrals he gives an account of the evolution of mediæval church building, giving evidence of considerable research—as, in fact, the whole work does; and in his Foreword he makes an interesting contribution as to the original architect of Rheims Cathedral, his information being obtained from the Municipal Archivist of Rheims. The cathedral was begun on May 6, 1211:—

"Jean d'Orbais furnished the plans for the whole building, carrying out the choir and probably the greater part of the transept. His successor was Jean le Loup, who directed the works for sixteen years. He undertook part of the nave, and also the great western front, which was continued by Gauchier de Reims from 1250 to about 1260. Following him was Bernard de Soissons, who constructed



Winscombe Church.
(From the Homeland Handy Guides.) Photo by A. H. Ransford, Winscombe.

the nave from the fifth bay to the ninth bay inclusive, and the great circular west window. It is known that Bernard continued to carry on the work till 1237, and that it was, without doubt, very soon after this date, that Robert de Coucy became Master of Nôtre Dame. Robert de Coucy died in 1311, and therefore he could not, as had at one time been believed, have been the original architect of the cathedral or of its porches. The following parts are attributed to him. The four first western bays of the nave, which, although they harmonise with the other bays, yet show distinct differences in style and in the method of construction. The differences of style may be traced in the profiles of the mouldings and in the carving of the capitals. It is very probable that he was the author of the side portions and upper parts of the west front, of which he may have modified the design; also of the towers. At the time of his death the great gallery of the front had not yet received its statues."

The book contains twenty-six full-page photographic illustrations, as well as plans, and we are enabled by the courtesy of the publisher to give two examples.

BOOKS RECEIVED.

ELECTRICAL WIRING, FITTINGS, SWITCHES, AND LAMPS. By W. P. Maycock, M.I.E.E. Second Edition. Pp. 628. (Whittaker & Co. 6s. net.)

WELL-BORING FOR WATER, BRINE, AND OIL. By C. Isler. Second Edition. Pp. 209. (E. & F. N. Spon, Ltd. 10s. 6d. net.)

CARPENTERS' HALL LECTURES:

MODELLING.

IN connexion with the course of Wednesday evening lectures on the arts connected with building, arranged by the Carpenters' Company, "A Demonstration in Modelling" was given in the Hall of the Company, London Wall, on the 15th inst., by Mr. Alfred E. Drury, A.R.A., Mr. Niemann Smith, past-master, presiding.

The "demonstration" was all that the word implies, and little or nothing more, for after the remark: "I am going to try and make a head from life; that is all I shall attempt to-night," Mr. Drury proceeded to model from a more or less unshaped mass of clay the head of the living model before him—a man with well-defined features, who had no doubt posed before. The various stages of the work were watched in silence for over an hour, by a large audience, who saw the gradual building up of the head—the "preparing of it"—the resemblance to the living original becoming stronger and stronger with almost every touch of the artist's hands, until, as the Chairman remarked, one felt that the lifeless head would in time turn round and talk to the original. Beyond an occasional rest, the artist worked for over an hour—and rapidly, it appeared to us, in spite of the artificial light.

The Chairman,

in proposing a vote of thanks, which was carried by acclamation, said they got an idea in a work of the kind of the enormous amount of labour involved in the production of a large statue. He reminded the audience of the work Mr. Drury had done at South Kensington, and mentioned the fact that the artist was engaged on a statue of the late King for the City of Aberdeen.

Mr. Drury,

in reply to the vote of thanks, said that what they saw was simply the preparation for a head, and it was all a matter of building up. It took time, as the Chairman said, What he tried to get was the character as soon as possible, for that was the main thing. After that it was a question of going on with the detail, and not losing the character. The tendency was to lose the character and get the detail. He should have liked to do more to the head, but he was not used to working by artificial light; had it been the daytime he could have done more—and then, he had an audience, and that made a difference.

THE TRANSITION OF LONDON'S PLAN, ITS DISAPPEARING LANDMARKS, AND . . . AFTER.

On the 16th inst. Mr. W. E. Riley, Architect to the London County Council, delivered a lecture in the Hall of the Carpenters' Company on "The Transition of London's Plan," etc. In the course of his remarks he said:—

"To the occasional visitor, no feature can be more striking than the kaleidoscopic changes in what may be termed the structural development of London. This never-ceasing mutation includes not only the formation of new and the widening of old thoroughfares, but also the removal and rebuilding of some of London's most notable landmarks, and it may be profitable to investigate the causes and extent of this municipal evolution.

The causes may be briefly indicated as the increase in business and traffic which have demanded the provision of additional street accommodation, and also the modern and healthier tendency to leave the centre and live in the suburbs, which has been so much fostered by the rapid transit afforded by tube railways and extensions of the electrified tramway system, and has also been considerably affected by the operation of Acts relating to housing of the working classes. To whatever cause it may be attributable, each generation appears to have dealt with the question of traffic, space about buildings, and kindred matters in a way that sufficed only for a time. There has been no comprehensive effort to foresee the wants of the future and to formulate a practical and rational plan. This default has led to the necessity of very heavy financial expenditure.

The improvements made since 1856 have considerably affected London's plan, but it is to be doubted whether the result is in any way adequate. Queen Victoria-street was completed in 1871, Northumberland-avenue in 1876, Shaftesbury-avenue in 1886, Charing Cross-road in 1887, and Rosebery-avenue in 1892, but these important and costly efforts to improve the planning of London must already be considered as almost obsolescent, and can only be regarded as touching the fringe of a great question. As an example of the costliness of the want of sufficient provision for future requirements, the improvement of High-street, Kensington, may be quoted. A widening on the *south* side was carried out in 1866 at a net cost of 126,000*l*. This improvement, however, gave a width of only about 47 ft. east of Church-street. It became rapidly apparent that a further widening would be necessary as this thoroughfare forms the main western outlet, and as early as 1888 a scheme was put forward with this object. It was not, however, until 1899 that powers were obtained to widen on the *north* side at an estimated cost of 87,500*l*. For nearly one-third of the improvement the widenings have overlapped, and the additional expense entailed thereby might have been avoided if a sufficiently comprehensive scheme had been put forward in 1866. Even now after an expenditure of 213,500*l*. the average width to the east of Church-street is only 60 ft., while to the west the width in one part is only about 44 ft. The erection, however, of such large stores as Barker's places the greatest difficulty in the way of any further widening.

The greatest of modern improvements is undoubtedly the large scheme now effected connecting Holborn with the Strand, the inception of which was described, as well as its architectural and historical effect. It is interesting to consider this scheme in connexion with Wren's plan of 1666 for rebuilding London. If the broad avenue west of the Fleet Ditch had been formed with main streets radiating from a centre near the present junction of Fetter-lane with Fleet-street, the expenditure of the large sum involved in constructing Kingsway would probably have been thought unnecessary even for the present requirements.

The very small endeavour which has been made comparatively recently as a result of the Royal Commission on London Traffic, which sat from 1903-1905, shows how supremely difficult it is to give any practical effect to the great problem which has to be dealt with. The average width of the streets widened by the Council is only about 60-62 ft., and a map has been prepared indicating roads 60 ft. and upwards in width. Perhaps the first impression which this map produces is as to the complete want of regulation or design in the lay-out of these main thoroughfares. A generally-accepted theory in modern town planning is that focal centres shall be provided from which broad roads shall radiate and which are joined by concentric streets; and those acquainted with the plans of Paris, Washington, and other cities will appreciate the advantages of this system. Paris has 102 miles of streets 98 ft. wide or more; London has only 8½ miles in all of streets of that width. It is instructive also to note how inadequate are the main outlets from London into the country. In many cases a width of 60 ft. is not maintained to the county boundary, and in the south-east and north-east of London such outlets can scarcely be said to exist. Paris has forty-two roads radiating into the surrounding country; London, with a population twice as large, has only twenty. The example of Paris may be cited as a complete contrast to the policy—or lack of policy—which has characterised London street improvement. As is well known, a plan of Paris improvements was drawn up so long ago as the end of the XVIIIth century, and this was followed by Haussmann's courageous scheme of the middle of the last century. The policy of systematic development has been continuous in Paris irrespective of changes of Government, with a result which is unique.

A consideration which has largely affected the architectural results of street improvements has been the operation of the Housing and Improvements Acts. In many cases it is stipulated that all persons displaced who had permanent employment in the district should be rehoused within a mile of their former dwelling.

As showing the magnitude of the housing operations and their influence on the disposition of the population, it is interesting to note that the Metropolitan Board of Works, the Council, and other authorities, have carried out clearance schemes which displaced over 70,000 persons, for 67,000 of which accommodation has been provided in new dwellings.

The architectural evolution of London is no less remarkable than the changes which have taken place in its street plan. The authorities have set an example in public buildings, such as the new Local Government Board and other public offices at the corner of Parliament-street and Great George-street, the new War and Admiralty offices and the offices for the Woods and Forests. Mr. Norman Shaw's new police offices at New Scotland Yard is a building generally acknowledged by those competent to judge to be one of the most original and skilfully designed of recent years. These and the large number of new theatres, hotels, and the rebuilding of banks and insurance offices in instances too numerous to be detailed, bear testimony to the importance of the change which is not even perturbed by any considerations of antiquity, as is seen by the demolition of Christ's Hospital in Newgate-street. It is to be hoped that the Government will see their way to retain the old premises now vacant in St. Martin's-le-Grand erected by Sir Robert Smirke, and which London can ill-afford to lose.

Some reference should be made to the work instituted by the County Council of preserving a suitable record of architectural and historical buildings which are rebuilt or demolished in connexion with improvement schemes. Every building is carefully surveyed. This has now been the practice for some years, with the result that a valuable collection of many hundreds of drawings and photographs has been formed which illustrate a phase of old London which is rapidly disappearing.

It is to be hoped that Mr. John Burns' Town-Planning Act may be of service in supplementing some of the deficiencies of inadequate building laws. London has especially suffered in this direction. Hitherto its evolution and extension have been controlled to a limited extent only, the requirements as to width of streets and space about buildings being very restricted in scope, and, provided a certain minimum standard were complied with, the sanction of the Council could not be withheld or might be set aside on appeal to the tribunal constituted under the Act. As a result, streets have been allowed in which "direct" communication is provided by streets of dog-legged shapes, and examples might be shown of adjoining estates which were deliberately laid out with the express object of preventing access from one to the other. The Building Act was powerless to prevent such a miscarriage of its intentions, involving present inconvenience and future harmfulness. Comparing this minimum with the powers exercised by other cities, Barrow-in-Furness under a local Act of 1875 can require a width of 80 ft. in main streets. Liverpool has similar powers, and, in addition, may require plans showing the general scheme for the development or laying-out of an estate. In

Manchester, Newcastle, Leicester, and other large provincial centres convenient accesses by cross streets must be provided in new thoroughfares at intervals of 100 yds. to 200 yds.; in London there is nothing in the building law to prevent the erection of the interminable unbroken rows of houses whose monotony is almost as offensive as their public inconvenience. If the Town-Planning Act can do anything to secure more rational and convenient development, it will have accomplished much.

It is, of course, of the utmost importance that traffic and business requirements in the central areas should receive consideration, but a no-less-pressing need is to establish the main arterial communications with districts surrounding the metropolis. Not only can main arteries be fixed now much more economically than, say, a decade hence, and in such a manner as to regulate the development of the suburbs, but it is most undesirable that the beautiful parts of south-east London and others on the western boundary which remain uncovered should be built on in the same uninteresting and unsatisfactory manner as other districts in those localities."

ARCHITECTURAL SOCIETIES.

Nottingham Architectural Society.

The fourth meeting of the Designing Club in connexion with this Society was held on the 14th inst., Mr. Robert Evans, jun., the President, in the chair. The subject set was "Designs of Ecclesiastical Work," and criticisms were made by Mr. W. R. Gleave, A.R.I.B.A. In order to save students the trouble of preparing special drawings for this subject, Mr. Gleave had asked the competitors to send in sketches and drawings from their own portfolios. Messrs. E. H. Heazell, Whittaker, Dickman, E. R. Sutton, and H. Gill also discussed the good points and otherwise of the drawings submitted, which Mr. Gleave had placed in the following order:—Mitre, first; Maltese Cross, second; Busy Bee, third; and The Dean, fourth.

On the proposition of the President hearty votes of thanks were accorded to Mr. Gleave and to those students who had been courageous enough to submit their efforts to such fierce criticism.

Mr. Gleave,
in reply, said that, while the criticisms were sometimes severe, they were never intended to be unkind, and he hoped that a severe criticism would spur the competitor to better efforts next time and not discourage him or others in any way.

At the next meeting of the Society on February 28 Mr. Bromley, F.R.I.B.A., will read a paper on "Water-colour as an Aid to Architecture," and will exhibit some of his own work.

Glasgow Institute of Architects.

A quarterly general meeting of the Glasgow Institute of Architects was held on the 15th inst. in the Secretary's chambers, 115, St. Vincent-street, Mr. John B. Wilson, F.R.I.B.A., President, in the chair. Reference was made to the death of Mr. Alexander Cullen, who had been a member of the Institute since 1897, and it was reported that the Council had minuted an expression of regret at his death. The Council had also noted with regret the death of Mr. D. P. Low, who, though not a member of the Institute, was understood to have belonged to the old Glasgow Architectural Association. The President also referred to the loss which the profession had sustained in the death of Colonel Eustace Balfour, F.R.I.B.A. The Secretary submitted a report on the matters which had been dealt with by the Council since the last meeting. The R.I.B.A. Council had agreed that members of allied societies who are eligible as Licentiates should be admitted as candidates for election by the Royal Institute Council if they are nominated by the council of their society, such members to be exempt from submitting drawings or other testimonies to the Royal Institute Council, provided they are certified by their own council as eligible and fit and proper persons to be admitted. Mr. James S. Gibson, Vice-President, R.I.B.A., explained the nature and object of the Licentiate scheme at a meeting held on the 23rd ult. It had been agreed to support the objects of a scheme prepared by the Worshipful Company of Plumbers with reference to standardisation of plumbers' work, which provides for the use of a special trade mark, approved of by the Board of Trade, by registered plumbers. The Council noted with satisfaction the success of two Glasgow students in the R.I.B.A. Prize Competition, viz., Mr. Herbert L. Honeyman, in winning the essay medal, and Mr. G. A. Henderson, in winning the Arthur Cates Competition. The R.I.B.A. had arranged to send a selection of the prize drawings, which would be exhibited in the Institute's rooms in April next. In reference to the proposed Scottish National Memorial to King Edward, it was unanimously agreed that, while expressing sympathy with the proposal for the erection of consumptive sanatoria, something of a monumental nature was more in keeping with the object. The meeting unanimously favoured the restoration of Linlithgow Palace in preference to any other of the proposed schemes.

Aberdeen Architectural Association.

The Aberdeen Architectural Association had a meeting on Saturday last week in the rooms of the Northern Arts Club, when an address was given on the subject of "Architectural Education" by Mr. Edward J. Wyllie from the Architectural School, Glasgow. Mr. James B. Nicol, President, occupied the chair.

Mr. Wyllie
briefly reviewed recent progress in architectural education, and described in detail what was now being done on the Continent—particularly in France and Germany—and in America. He dwelt briefly on the different systems of architectural education in those three countries, emphasising the great merits of the French curriculum and how it had, with certain modifications, been adopted in Glasgow. Mr. Wyllie urged the importance of a thorough architectural education, which, he said, should combine an artistic, scientific, and practical training. This could only be got in an art school, a technical school, and in the office of a practising architect. A discussion followed the paper, and was taken part in by the Chairman, Messrs. Arthur Clyne, H. F. David, J. M. Aitken, Banbury, Devlin, and J. A. Ogg Allan.

Royal Institute of the Architects of Ireland.

A special meeting of the Council of this Institute was held on the 20th inst. Mr. R. Caulfeild Orpen, F.R.I.A.I., Vice-President, in the chair. There were also present:—Messrs. F. Batchelor, J. H. Webb, G. P. Sheridan, H. Allberry, C. J. MacCarthy, A. G. C. Millar, F. Hicks, L. O'Callaghan, and C. A. Owen, Hon. Secretary.

Some correspondence was dealt with. Mr. Geo. L. O'Connor, member, was elected a Fellow of the Institute. A report from the Professional Practice Committee in connexion with the conditions of contract and other matters was submitted and adopted. It was resolved that the suggestion contained therein should be circulated amongst the members.

GENERAL NEWS.

Appointment.

The Dean and Chapter of Durham have appointed Mr. Mervyn Macartney, F.S.A, Surveyor to St. Paul's Cathedral, to the post of Consulting Architect to their cathedral, vacant through the death of Mr. Charles Hodgson Fowler, F.S.A.

Building Trades Exhibition at Olympia.

The ninth biennial Building Trades Exhibition will be opened on Saturday, April 22, by Mr. Leonard Stokes, President of the Royal Institute of British Architects. As our readers are probably aware, the Building Trades Exhibition is organised every two years by Messrs. H. Greville and Hugh C. Montgomery. It may be doubted if any other exhibition can in the same way fill the huge building at Addison-road—main hall, annexe, and galleries—from end to end with exhibits strictly germane to the industry immediately concerned. As before, the galleries will be found to constitute a municipal section for the special benefit of borough surveyors and engineers; whilst the whole of the ground floor is devoted to the multifarious requirements of the architect and builder. The wall which used to separate the main hall from the annexe has recently been removed, the result being that the stands will run continuously from the entrance in Addison-road to the exit in Blythe-road. Arrangements are being completed for official visits of members of the many associations and societies connected with the building industry, with whom this Exhibition has become such a well-recognised event, that we may feel assured of its maintaining its high standard of interest.

Gresham College and Trust.

As the current arrangement for delivering the lectures in the City of London School proves to be unsatisfactory by reason of the unsuitability of the site for that purpose, the Corporation have adopted a scheme formulated by the Gresham Trust Committee. Instead of remodelling the interior of the present College, they will purchase for 20,800*l.* some property on an area of 1,220 sq. ft. adjoining in Basinghall-street, and will expend about 15,000*l.* in erecting new buildings upon the enlarged site, with a lecture-hall for from 420 to 500 persons, and separate offices to be let for 500*l.* per annum. The present buildings were erected, in 1842-3, after plans and designs by G. Smith.

Sale at "The Grange," Kilburn.

The "old oak room" at "The Grange," Kilburn, is to be included by Messrs. Douglas Young & Co., surveyors and auctioneers, Coleman-street, London, E.C., in the sale of materials on the premises there on Wednesday, March 8. It is a genuine old panelled oak room of the Early Georgian period, with finely-executed carvings, and in an excellent state of preservation.

Engineering Pupils' Annual Dinner.

The second annual dinner of past and present pupils of Mr. G. P. Knowles, A.M.Inst.C.E., F.S.I., was held at the Criterion Restaurant on Friday evening last week. Mr. Knowles was in the chair. "The Chairman" was proposed by Mr. J. S. Killick, A.M.Inst.C.E., while the toast of "Past and Present Pupils" was proposed by Mr. Knowles, who mentioned that a number of those who were present at the dinner last year were now filling posts of responsibility in all parts of the world, Japan, India, Canada, Africa, etc. Other toasts followed.

Langholm Waterworks.

The town of Langholm was one of the first border towns to instal a system of waterworks, their present water supply being nearly sixty years old. The time has now arrived when the consumption has overtaken the supply and the Town Council recently engaged Mr. Harry W. Taylor, A.M.I.C.E., of Newcastle-upon-Tyne (Messrs. Taylor, Wallin, & Taylor), to advise them as to the best means of providing an up-to-date supply.

New Streets, etc., Hendon, N.W.

Mr. W. O. E. Meade-King, M.Inst.C.E., held a local government inquiry at the Council offices on the 13th inst. into the Council's application to borrow 14,223*l.* for making up new street and for road improvements at Golder's Green, etc., Hendon, necessitated by the rapid growth of the district owing chiefly to the opening up of the district by the Hampstead Tube Railway, which brings Golder's Green within twenty minutes of Charing Cross. Mr. S. Slater Grimley, the Engineer to the Council, explained the details of the Council's proposal, and the Inspector promised to view and report. For the year ended December 31, 1910, the Council consented to applications to construct thirty-nine new streets, 1,452 houses, ten churches and chapels, 122 shops and offices, and seventy-seven garages, alterations, and other buildings. The number of houses completed for occupation during the year mentioned was 673, while 715 others were in course of erection. Five miles of new sewers and drains were constructed, and no less than 3,365 notices by builders were attended to by the Engineers' staff.

COMPETITION NEWS.

Trevor Estate.

The second 60*l.* premium in this competition was gained by Mr. H. S. Goodhart-Rendel, of 5, New-court, Lincoln's Inn, W.C.

Higher Grade School Competition, Girvan.

At a meeting of the Girvan Burgh School Board, held on the 14th inst., the award of the assessor, Mr. H. E. Clifford, of Glasgow, in connexion with this limited competition, was read and approved. There were nine competitors, and the selected plans were those of Mr. Wm. Cowie, of Ayr.

The school is to be built on the site of, and incorporating, the existing infants' school, and is intended to form a higher grade centre. The accommodation provided is five class-rooms for thirty pupils each, workshop, cookery, science, and art rooms, and a gymnasium. In addition, the existing building is adapted to form other four classrooms. The whole is planned, with a central hall, in two stories.

The estimated cost of the scheme is 6,000*l.* including fees, and the work is to proceed immediately.

Church, New Cumnock.

We imagine that the suggestions of the Deacons' Court of New Cumnock, when they wish to build a new church, with the usual rooms, and to enlarge the present hall, will not meet with much support, unless there is very little work indeed to be done in that part of the country. Quoting the Court's advertisement in the *Glasgow Herald* of 17th inst. we find that :—

"The full sum available for the total outlay, of every kind and including all professional fees and incidental things, being 3,700*l.*, no plan can be faced which would go beyond that sum," which is straightforward enough.

But the next paragraph runs :—

"Every plan, with relative cost estimate, sent in shall, *ipso facto*, and without any liability whatever being incurred therefore, be the exclusive property of the Court, with full power to use it, or deal otherwise with it, according to the Court's own absolute discretion. Should the Court resolve to adopt any plan sent in, it shall be in the option of the Court to give the author thereof a gratuity of 10*l.* sterling, but the Court shall in no way be bound to employ him as architect in the matter."

This seems to need no comment. But things may not be so bad. An avenue of hope opens in the following pleasingly parochial intimation :—

Any further details, subject, however, to the foregoing conditions, may be learned from the Rev. William Scott, who (only, however, if advised at least two days beforehand) would meet with intending competitors at the church, on the afternoon of Saturday, February 25, at half-past three o'clock.

TRIBUNAL OF APPEAL UNDER THE LONDON BUILDING ACT.

Trustees, Executors, and Securities Corporation *v.* London County Council.

ON Thursday last week the Tribunal sat at the Surveyors' Institution, Mr. A. A. Hudson presiding, to give their decision in the appeal on behalf of the Trustees, Executors, and Securities Insurance Corporation, Ltd., under sub-sect. 1 of sect. 22 of the London Building Acts (Amendment) Act, 1905, against the requirements of the London County Council contained in a notice dated the 26th day of July, 1910, and served upon the appellants in respect of the building known as Winchester House, Old Broad-street, E.C. Mr. Astbury, K.C., and Mr. Douglas Hogg appeared for the appellant, and Mr. Cecil Walsh represented the London County Council.

The facts of the case were reported in the *Builder* of February 10.

The Chairman said the Tribunal had decided to allow the appeal provided that certain works to be specified should be executed by the appellants to the reasonable satisfaction of the London County Council, with liberty to apply to the Tribunal. The effect of this decision was that as to the main part of the Council's requirements they did not think they were such as could be reasonably required under the circumstances to provide proper and sufficient means of escape in case of fire. The main part of the Council's requirements was divided substantially under two heads—one a new fireproof staircase, or, rather, a new staircase of incombustible materials from the top to the bottom of the building, cutting through the offices of different tenants, and, secondly, the making of various self-closing doors across the corridors of the several floors. There were also various minor requirements to which the Tribunal had given effect to, and which would be set out in the order which they would issue in due course. The greater part of these minor matters were agreed to by the appellants at the hearing, but the Tribunal had made some additions, and in particular they thought it was important that the furniture and other stores in the basement should be shut off with double iron doors, and that the wooden staircase on the fifth floor should be protected with fire-resisting material. At the hearing the appellants consented to put double iron doors in the basement or to remove the furniture which was stored there, but in view of the future the Tribunal thought it well to make a permanent job of the matter. The protection of the wooden staircase on the fifth floor was not suggested by either of the parties, but it certainly seemed to him to be most desirable, especially as the underside of the staircase was in close proximity to an office about which there was a good deal of question. He would like to know if the appellants agreed to that particular clause.

Mr. Astbury: Certainly. Although they had not the actual order before him, he took it from what the Chairman had said that the requirements did not go further than what the appellants were willing to do before coming to the Tribunal.

The Chairman said substantially it was what the appellants agreed to at the hearing.

Mr. Astbury said that with regard to the wooden staircase which the appellants had not hitherto been asked to do, all that they were asked to do were things which were offered to the County Council, and which the Council refused to accept otherwise than coupled with conditions which the Tribunal now held were unreasonable. He contended, therefore, that the appellants had entirely succeeded in regard to the things they came before the Tribunal on. This had been a serious matter for his clients, and it was an entirely new policy of the County Council. It had been very expensive for his clients, and he appealed to the Tribunal to allow substantial costs.

The Chairman said the Tribunal looked upon the double iron doors in the basement and the protection of the wooden staircase as very material matters as affecting their decision to allow the omission of the greater requirements of the Council.

Mr. Astbury pointed out that neither of these two things were asked for by the Council. The appellants came before the Tribunal to prevent their building being ruined.

Mr. Walsh said the County Council was a public body performing a public duty. Mr. Astbury's contention all through had been that the building was complete, and that there was no fire risk, and that there was no single item inside or outside the notice which could be reasonably required, and he asked the Tribunal to cancel the notice. He submitted that Mr. Astbury's position could not be maintained now, although he recognised that on the two main points the Tribunal was against the Council. The Council had carried out a public duty, and, at any rate, the result of their interference was that better provision would be made in the building.

After considerable legal argument, the Chairman said what the Tribunal felt was that a serious part of the case was the requirement to put in the staircase, which, in effect, would have very seriously interfered with the valuable tenancies of the appellants, and this requirement was practically abandoned during the hearing. It was obvious that when requirements of that kind were made, persons would not be well advised if they did not take good advice, and, when they appealed, be well represented. They would have to consider what costs they would award.

CORRESPONDENCE.

City Architecture.

SIR,—I have perused with much interest the report in your last issue of the paper read by Mr. Paul Waterhouse before the R.I.B.A., containing a suggestion that the architectural developments of London should be placed under the control of official architects, one of whom should be appointed by each Borough Council, and that the appointments should only be made for a short term of years, and given to men who are in practice, provided they do not do so in their own district.

He appears to have been thinking only of the centre of London, but a little acquaintance with the great suburban boroughs and the larger country towns would have shown him that the need of such appointments is much greater there.

His scheme is, therefore, of necessarily wider application than he seems to have imagined. It is an ideal worth working for, but impossible to confine to one small district only. Once extended in this way to include the whole country, it would soon be found to be impossible to make the appointments other than permanent, and that it would be necessary to require the officials to devote their whole time to the work, for there would be plenty of it for them to do.

Heavily burdened as the country is at present with rates, it is inconceivable that any measure would pass into law at the present time which would involve the appointment of a number of officials whose salaries would have to be found. The country is not ready to accept any such suggestion. As architects, we all recognise that something is needed to be done. There is a good deal of talk about the preparation of a Registration Bill by the R.I.B.A., as a sequel to the establishment of the Licentiates.

A Bill with a similar object has long been before the profession. The passage of either measure would insure that all architects in future should be in possession of at least competent knowledge and skill.

A great deal of what would be accomplished by Mr. Waterhouse's officials could be done at once if the Registration Bill which is eventually passed, were to contain a clause to the effect that no drawings submitted to local authorities for building work should be valid unless they were signed by registered practitioners.

This would insure that at least the drawings had been supervised by a trained architect, and would, to a large extent, do away with the present scandalous state of affairs, which we country architects probably recognise more fully than those who are engaged upon bigger works in London. H. C. W. BLYTH.

"Civitas" and the Soane Award.

SIR,—The occasion of the withholding of the Soane Award has caused so much comment by and so many inquiries from personal friends and the young men of the architectural profession that some explanation seems to be called for.

The President and Council claim that I received "substantial" help, and I have freely acknowledged that I did receive some help in colouring, and also in setting up of a rough draft from my own sketches for the perspective, the latter being work which I considered was of a purely mechanical nature; the responsibility, therefore, for the withholding of the Soane is entirely my own and I wish to take all blame. I have lost a much-coveted prize, but I am still very young and hope to make amends.

In any case the loss of the Soane is not the bitter disappointment to me that it might have been to some, for my competing at all was a mere chance accident. I was already a student in Paris when the programme was issued, and it occurred to me that I might as well work upon this project as any other. Moreover, when I read the programme I realised that the award would probably go to the man who could convert a civic ditch of 120 ft. into a dignified water approach, for only thus could the scale be obtained which could in any case express the status of a capital city. I thought when I had solved this problem that I would probably be well in the running.

Now as to the help I received. The fact that I prepared my early studies during the summer vacation absolutely precludes any question as to the authorship of the design, so the whole objection naturally revolves upon that of draughtsmanship, and here I may further add that I did not receive any assistance whatsoever until the Thursday preceding the Wednesday, the day of sending in. This shows that I did not even anticipate any help. At this stage all the drawings were in line, and I have the assurance of responsible authorities that, had I sent in my drawings at this stage, I should still have been the winner. Had I for one moment anticipated that so much value was placed on gilt and Chinese white I would have washed out every trace of it.

Only on one point do I offer any criticism of the Council's action, and this for awarding me the Soane in face of the help rendered by my friend, M. Carlu, whose every touch is unmistakable, and was unquestionably recognised by Professor Reilly, who delivered the criticisms.

PRENTICE MAWSON.

EDITORIAL SUMMARY.

The leading article is on "Fire Protection in the City," the economics of the subject being dealt with.

The second article this week (p. 230) is on the "Gothic Revival in Holland." Following a summary of the movement, an account is given of some individual churches in different centres. Illustrated.

A brief notice is given on p. 233 of Recent Developments in English Portrait Painting, based on a notice of two exhibitions.

Our "Notes" include: "Education of the Public"; "Colour in London"; "Bishop Gore's Address to Architects" (p. 233).

A combined meeting of the Architectural Association with the Camera, Sketch, and Debate Club was held on Monday, when Mr. W. G. Newton, B.A., read a paper and opened a debate, the subject being: "That Brick is Eminently Suitable for Large Town Buildings." Mr. Newton based his claim on historical, chemical, and artistic grounds, and read an interesting paper. He was opposed by Mr. Alan Snow and others (p. 234).

Our Book Notices (p. 236) include: "The Cathedrals of Northern France"; "Homeland Handy Guides"; "The Antiquary."

A brief notice of the "Demonstration in Modelling" by Mr. Alfred E. Drury, A.R.A., at Carpenters' Hall, appears on p. 238; and on the same page a *résumé* of Mr. W. E. Riley's Carpenters' Hall lecture on "The Transition of London's Plan, its Disappearing Landmarks, and—After."

The Tribunal of Appeal under the London Building Act have given their decision in the case of "Trustees, Executors, and Securities Corporation *v.* L.C.C." (p. 240).

The Monthly Review of Engineering (p. 243) includes: "The Port of London," illustrated; "Manchester Water Supply," with illustrations; "The Industrial Uses of High-Pressure Gas"; "Fire Precautions at the Turin Exhibition"; and notes.

The first article of the Building Trade Section (p. 248) is entitled "Scaffolding," followed by "Trade Unions and the Law." Other matter includes: "Master Builders' Associations"; "Government Contracts"; "Projected New Buildings in the Provinces"; "Applications under the Building Act"; and "General Building News and Trade Notices."

MEETINGS.

FRIDAY, FEBRUARY 24.

Queen's College, London.—Professor A. Wallace Rimington, R.B.A., on "The Understanding of Pictures." Illustrations. 3 p.m.

Royal Institution.—Professor Jean Perrin, D.Sc., on "Mouvement Brownien et Réalité Moleculaire" (in French). 9 p.m.

Royal Sanitary Institute (Lectures for Sanitary Officers).—Dr. Charles Porter, M.D., B.Sc., on "Duties of a Sanitary Inspector—Offensive Trades and Trade Nuisances, etc." 7 p.m.

Institution of Civil Engineers.—The following Student's Paper will be read and discussed—"The Design and Construction of Works for the Bacterial Purification of Sewage," by Mr. R. J. Samuel, B.Sc. 8 p.m.

Junior Institution of Engineers.—In consequence of the death of Mr. J. Wylie Nisbet, M.I.Mech.E., Chairman of the Junior Institution of Engineers, the reading of the paper before the Institution on "The Construction of the Royal Automobile Club Building," by Mr. S. Bylander, has been postponed till this date.

SATURDAY, FEBRUARY 25.

Royal Institution.—Mr. T. G. Jackson, R.A., M.A., F.S.A., on "Architecture: The Byzantine and Romanesque Period"—III. 3 p.m.

Builders' Foremen and Clerks of Works' Institution.—Annual dinner, King's Hall, Holborn Restaurant. 6 p.m.

MONDAY, FEBRUARY 27.

Royal Institute of British Architects.—Business meeting. Election of Royal Gold Medallist. 8 p.m.

Royal Sanitary Institute (Lectures for Sanitary Officers).—7 p.m.

Royal Academy of Arts (Lectures on "Architecture").—Professor R. T. Blomfield, A.R.A., on "The End of Gothic in France." 4 p.m.

University of London (Victoria and Albert Museum).—Mr. Banister Fletcher on "Spanish Mediæval Architecture." 5 p.m.

TUESDAY, FEBRUARY 28.

University of London (British Museum).—Mr. Banister Fletcher on "Early Christian Architecture in Rome." Lantern illustrations. 4.30 p.m.

Institute of Sanitary Engineers (Students' Lecture).—Mr. P. M. Fraser on "Materials." 7 p.m.

Nottingham Architectural Society.—Paper by Mr. A. N. Bromley on "Water-Colour as an Aid to Architecture." 8 p.m.

Surveyors' Institution.—The annual dinner, Whitehall Rooms, Hôtel Métropole. 7 p.m.

WEDNESDAY, MARCH 1.

The Carpenters' Company, Carpenters' Hall, London-wall (The Arts Connected with Building).—Mr. Arthur Keen on "Joinery in Old London." 7.45 p.m.

Royal Sanitary Institute (Lectures for Sanitary Officers).—Professor H. R. Kenwood on "Methods of Disinfection." 7 p.m.

Edinburgh Architectural Association.—Notes on the recent International Town Planning Conference, by Mr. J. A. Williamson.

Royal Society of Arts.—Dr. Leonard Hill, F.R.S., on "Caisson Sickness and Compressed Air." 8 p.m.

THURSDAY, MARCH 2.

Carpenters' Hall, London-wall.—Professor Vivian B. Lewes on "Fire and Fire Risks." 8 p.m.

Royal Institution.—Mr. Arthur C. Benson on "Ruskin"—I. 3 p.m.

Royal Academy of Arts (Lectures on "Architecture").—Professor R. T. Blomfield, A.R.A., on "Henri IV." 4 p.m.

FRIDAY, MARCH 3.

Royal Sanitary Institute (Lectures for Sanitary Officers).—Professor H. R. Kenwood on "Elementary Statistics." 7 p.m.

Glasgow Technical College Architectural Craftsmen's Society.—Mr. James S. Boyd on "A Study of French Masonry." Illustrated. 8 p.m.

Leicester and Leicestershire Society of Architects.—Mr. Arthur Wakerley on "The Growth and Development of Leicester." 8 p.m.

SATURDAY, MARCH 4.

Architectural Association.—Third spring visit, Recruiting Station and Stables, Whitehall. 2 p.m.

The Incorporated Clerks of Works' Association.—Twenty-eighth annual dinner, King's Hall, Holborn Restaurant. Mr. Leonard Stokes, President of the Royal Institute of British Architects, in the chair. 6 p.m.

Edinburgh Architectural Association.—Visit to (1) General Post Office; (2) new galleries of the Royal Scottish Academy.

Junior Institution of Engineers.—Visit to the London County Council's Greenwich Generating Station. 3 p.m.

FIFTY YEARS AGO.

From the *Builder* of February 23, 1861.

The First Submarine Telegraph.

THE formation of the first submarine electric telegraph is claimed for Colonel Colt, of revolver celebrity, who, it is said, in 1842-3, laid down a submarine telegraph, connecting the Merchants' Exchange at New York with Coney Island and Fire Island. Gutta-percha was not then known; but the cable is said to have been insulated with a combination of cotton-yarn with asphalt and bees'-wax, and the whole was enveloped in a leaden pipe.

THE LONDON COUNTY COUNCIL.

A MEETING of the London County Council was held on Tuesday at the County Hall, Spring-gardens, S.W. The Chairman, Mr. Whitaker Thompson, presided.

LOANS.—Sanction was given to the following loans: 3,060*l.* to the Stepney Borough Council for their electricity undertaking, and a further sum of 4,148*l.* for street improvements, etc.; the Paddington Borough Council 13,000*l.* for street lighting; and the Woolwich Borough Council 1,839*l.* for contributions to street improvements.

SIZE OF CLASSES.—Mr. E. A. H. Jay moved the adoption of a report of the Education Committee recommending that the President of the Board of Education should be asked to receive a deputation from the Council on the subject of the Board's letter of December 20 last, announcing their decision to make a substantial reduction from the annual grants in cases where Article 14 of their Code (which provides that the number of scholars in a class under one teacher shall not exceed sixty) had been violated. The Committee's recommendations were adopted.

MAY-ROAD SCHOOL, HACKNEY.—The Education Committee reported that they had under consideration a scheme for enlarging this school by 256 places, at an estimated cost of 6,316*l.* The Committee recommended, and it was agreed, that the statutory public notice be given of the Council's intention.

REPAIRS TO SCHOOLS ON THE SCHEDULE OF PRICES.—The Council on February 7 accepted the tender of J. Marsland & Sons for carrying out repairs, on the approved schedule of prices, to school buildings situated in six groups, comprising fourteen county electoral divisions. In view of the large amount of work involved, Messrs. Marsland & Sons were asked whether they were prepared to undertake the work in so many groups. The firm replied, stating that the number of schools was rather more than they anticipated. In view of this, the Education Committee recommended that the next tender, that of Messrs. E. Proctor & Sons, should be accepted in groups 23 (Deptford) and 25 (Dulwich). This was agreed to.

ALTERATIONS TO THEATRES, ETC.—The Theatres and Music Halls Committee reported that they had considered drawings for the following, which they had approved: London Exhibition-buildings, Earl's-court—Arrangements in connexion with the Wholesale Furniture Manufacturers' Co-operative Exhibition. Olympia—Arrangements in connexion with the Aero and Motor-boat Exhibition. Proposed Opera House, Kingsway—Fire-resisting shutter to the scene dock. Victoria Palace (Royal Standard Muise Hall)—Alteration to the gallery exit and rearrangement of the back of the balcony. Shaftesbury Theatre—Alterations to the footlights.

The Committee also recommended that approval be given to drawings submitted by Mr. E. Cannell in respect of the premises, 62, Kingsland-road, which it is proposed to adapt for use as a cinematograph hall, and this was agreed to.

SUB-LETTING.—The Asylums Committee reported that Messrs. George Parker & Sons, the contractors for the erection of an acute male hospital at Horton Asylum had been allowed to sub-let the damp-course work to the Roadamant Company, of 65, London-wall, E.C., and the artificial stonework to Messrs. M. McLeod & Co., of 85, Gracechurch-street, E.C.

THE MALL EXTENSION.—The Improvements Committee submitted a further report on the question of the extension of the Mall to Charing Cross, and recommended that expenditure on capital account of 60,000*l.* be sanctioned, which was agreed to.

ILLUSTRATIONS.

R.I.B.A. Soane Medallion Competition.

PROFESSOR REILLY, in reviewing this competition at the R.I.B.A. meeting on January 30, referred to the two designs we publish in the following terms:—

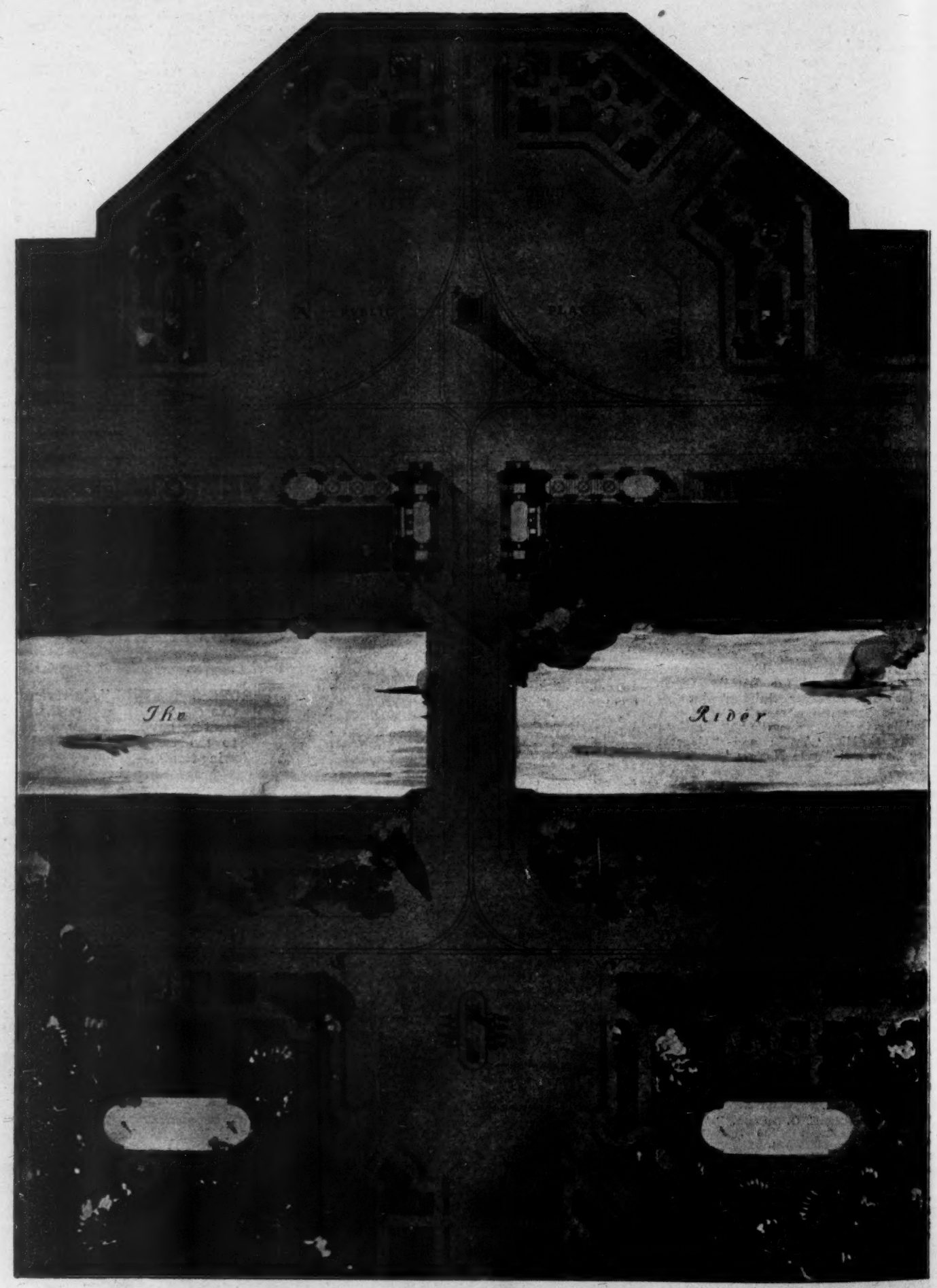
"'Civitas' has sent in a thoroughly Beaux-Arts set of drawings, even to the gold borders and the carefully-composed frontispiece of details. The plans, sections, and elevations are all made things of interest in themselves. The draughtsmanship, if somewhat uneven, reaches in places a very high level indeed. The drawings are shaded throughout and made intelligible to laymen. In England we are wont to play up too much to the man who boasts he can never understand a plan, and I am sure the public appreciation of our art suffers in consequence. "Mauerthor" has had an honourable mention given him for a clever essay in François Premier architecture. The Soane is not restricted, unfortunately, I think, to the fine classical architecture practised by Soane and his contemporaries. It is therefore open to anyone to send in what the Americans would call an essay in archæology, and in this case it has been done with American thoroughness."

We print on another page a letter from Mr. Prentice Mawson in reference to the unfortunate result of this competition.

The following notes have been supplied by Mr. C. P. Walgate in explanation of his design:—

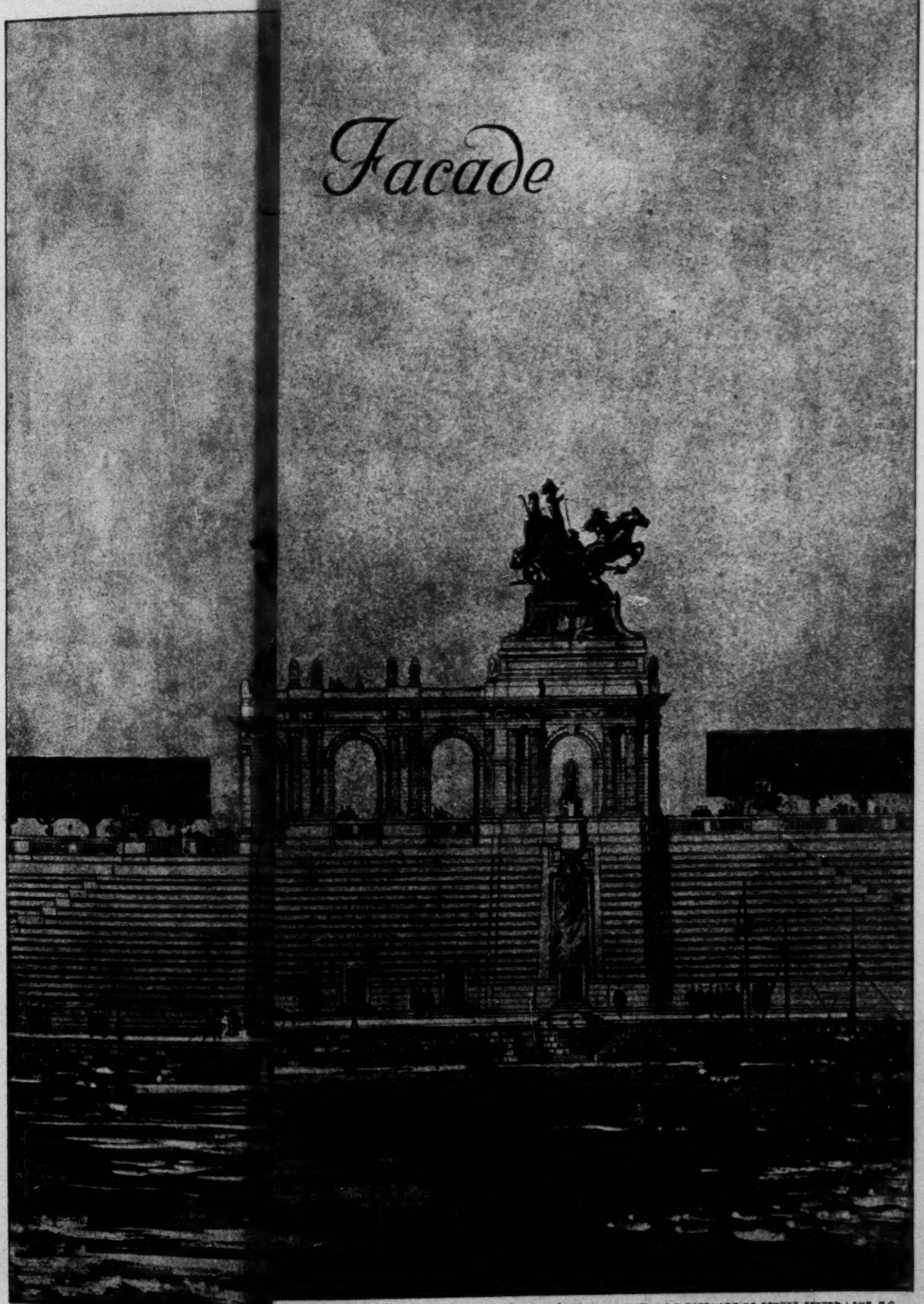
"The scheme was commenced in the conviction that the highest aim in the design of architecture is the expression of motive, of embodied thought; and the motive suggested in the subject set is capable of at least one complete expression. In practical work nowadays the public expects us to be

fashionable in our designs, but in a students' competition we plead for broad enough sympathies in our critics to enable us to submit hopefully sincere and thorough work in any style which is in accordance with the regulations of the competition. The story of the conception of the Gateway of the ancient city of Jamais is the story of architecture. A triumphal arch and a grand place are classic in their very essence. Is not a gatehouse as truly mediæval? It came with only those beauties natural to things which have evolved under stress the forms which best fulfil their functions. The residence of the keeper of the gate followed, sheltering behind the gatehouse, strong, but not so strong that it might have grown up alone. Finally, the graces and pomp of prosperity were grafted upon the necessities of former years. It is the history of a community in stone, and if my initial conviction be the truth, I am glad that I have learned the lessons of a mediæval gatehouse."



R.I.B.A. Design Submitted for the Soane Medallion by Mr. P. Mawson. General Plan.

Facade



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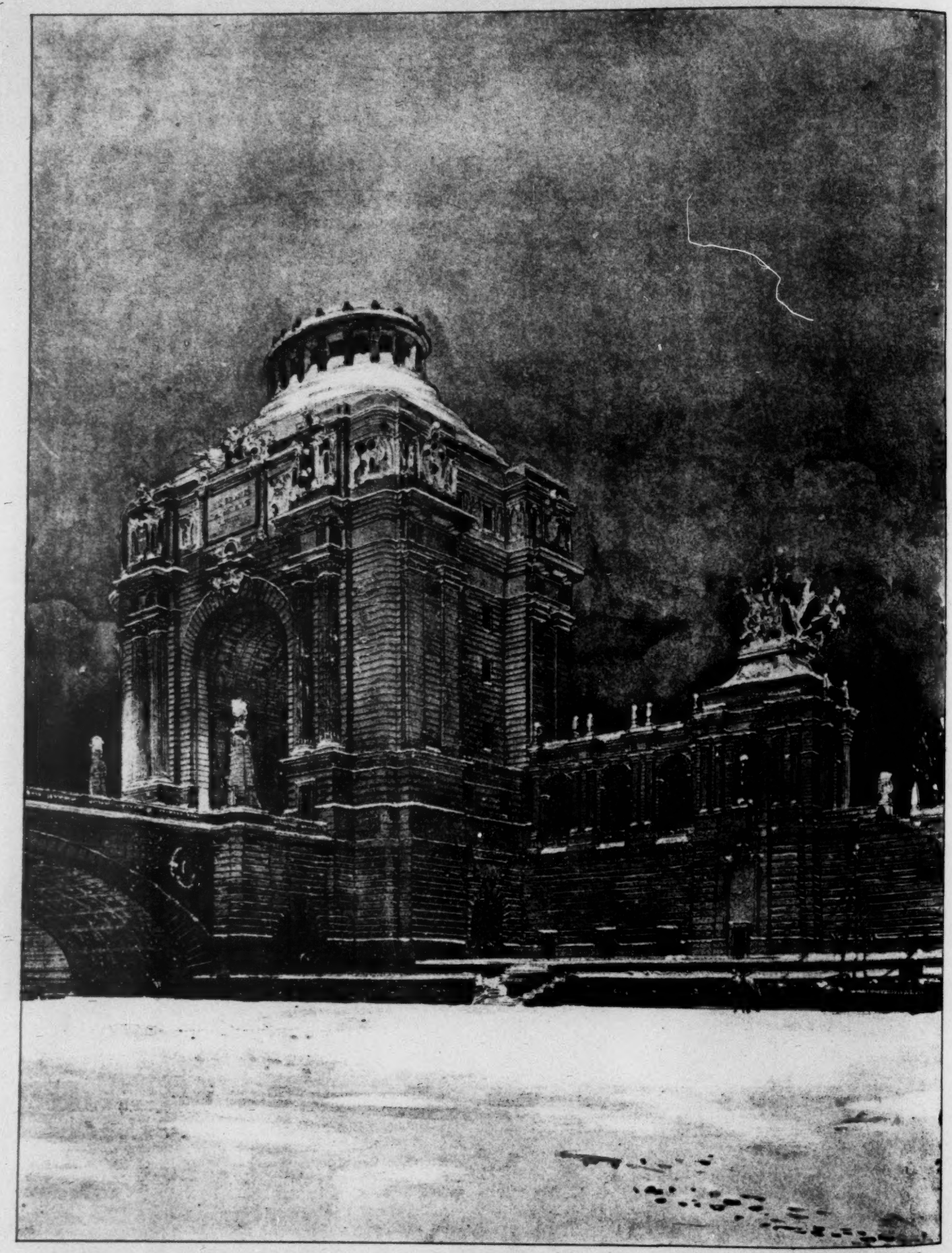

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PERSPECTIVE VIEW.

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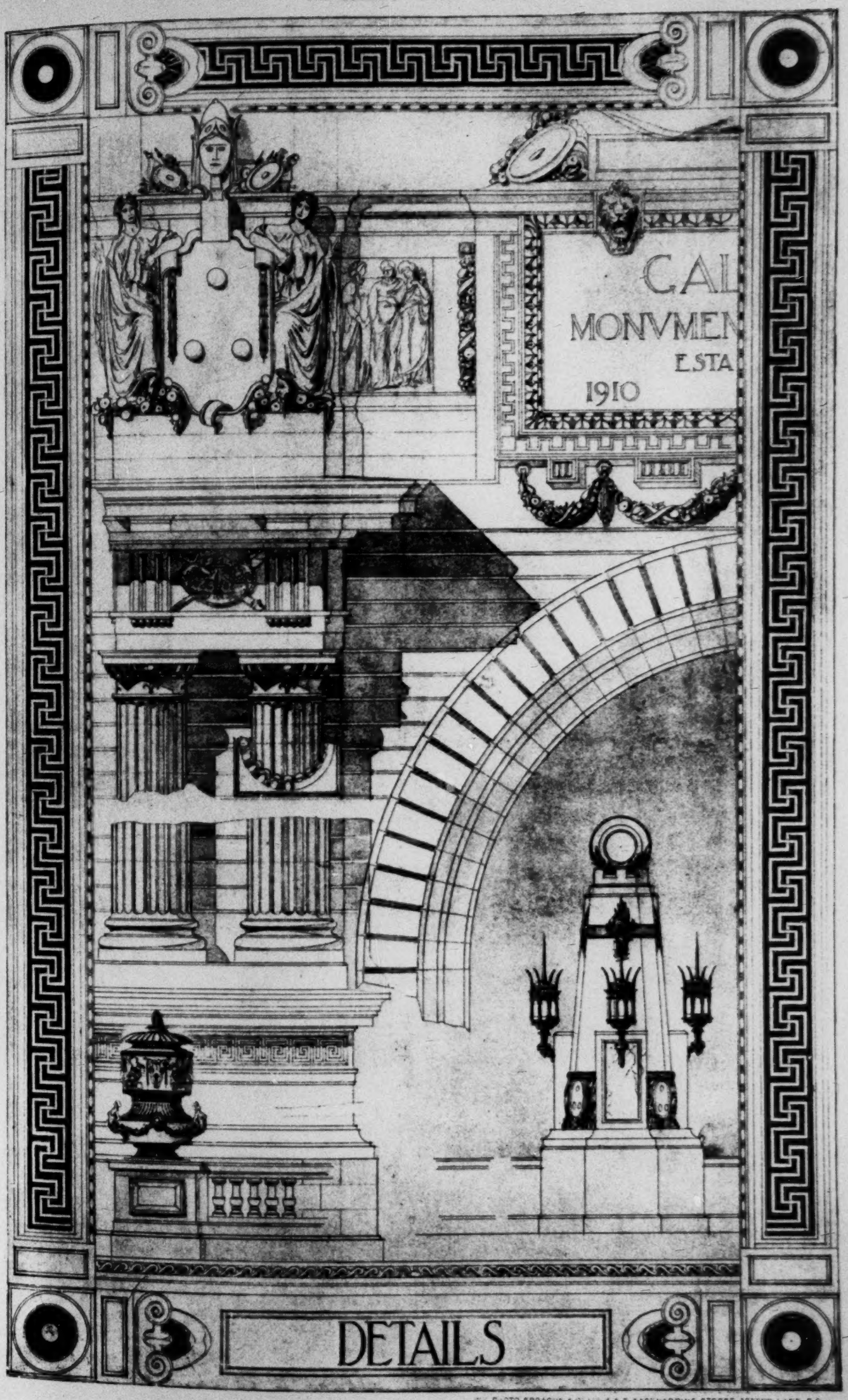

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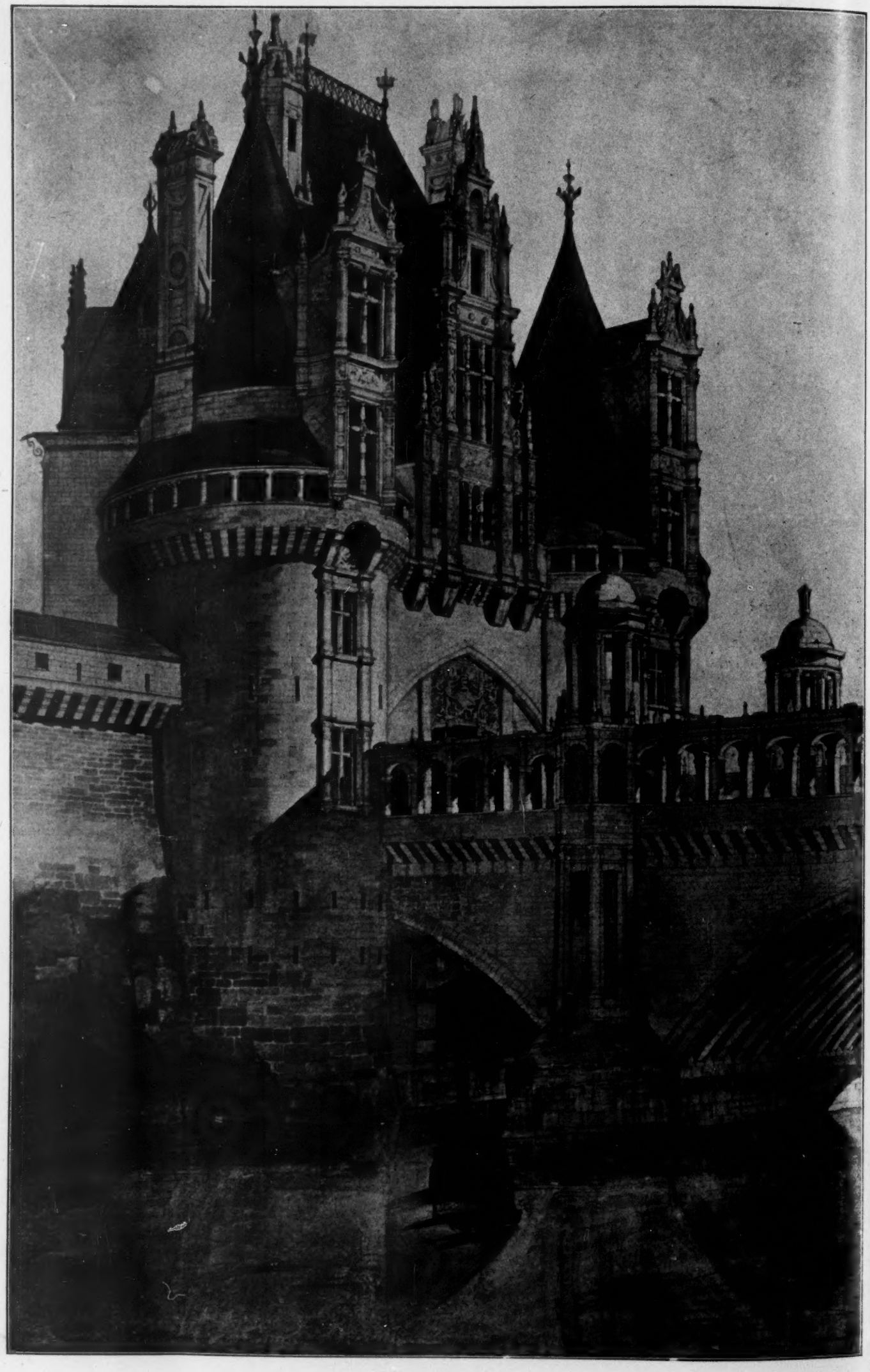
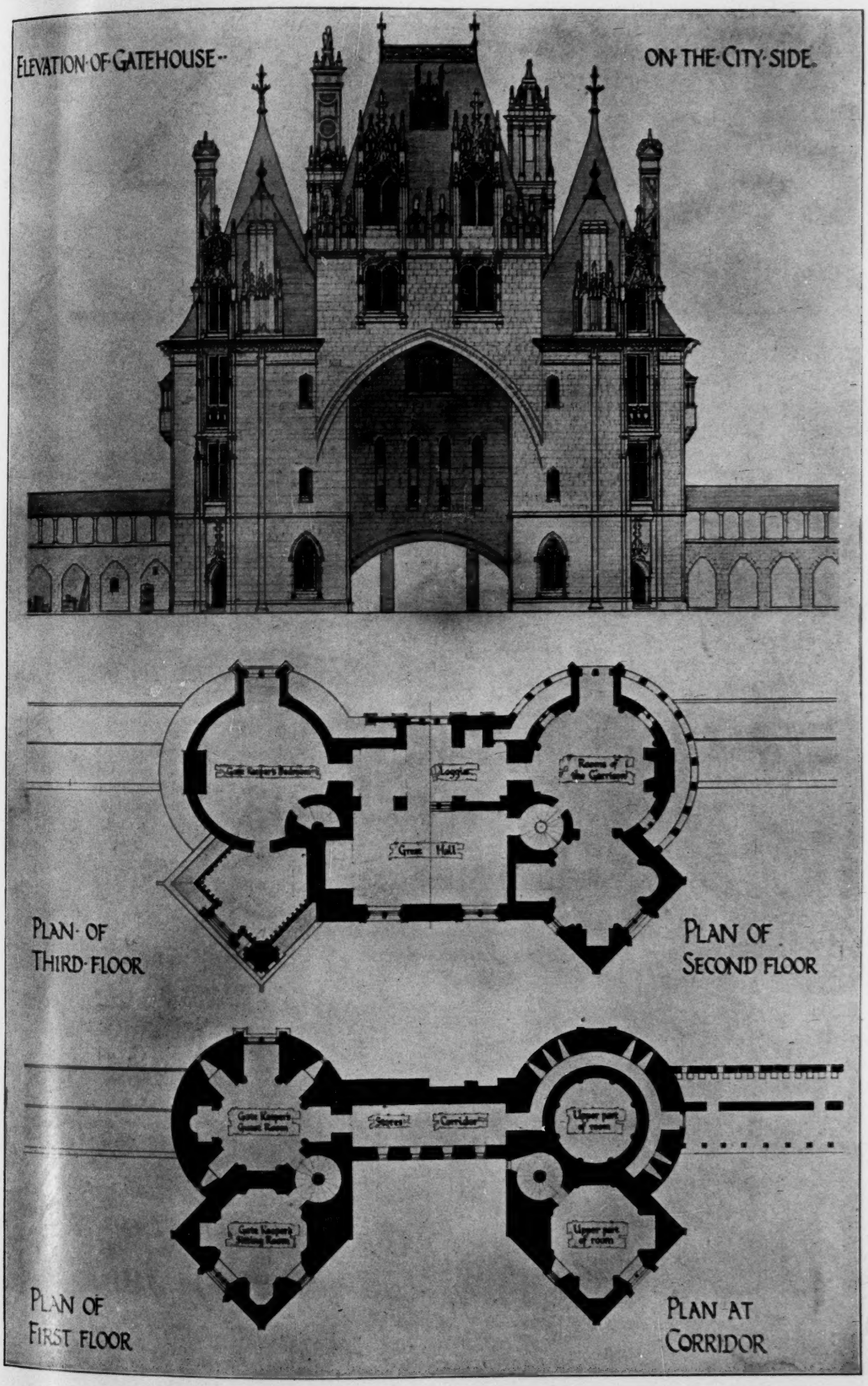


PERSPECTIVE VIEW.

Sprague & Co., Ltd., Printers, 4 & 5 East Harding St., E.C.

R.I.B.A.: SOANE MEDALLION. CERTIFICATE OF HON. MENTION & TEN GUINEAS.—Mr. C. P. Walgate.



ELEVATION AND PLANS.

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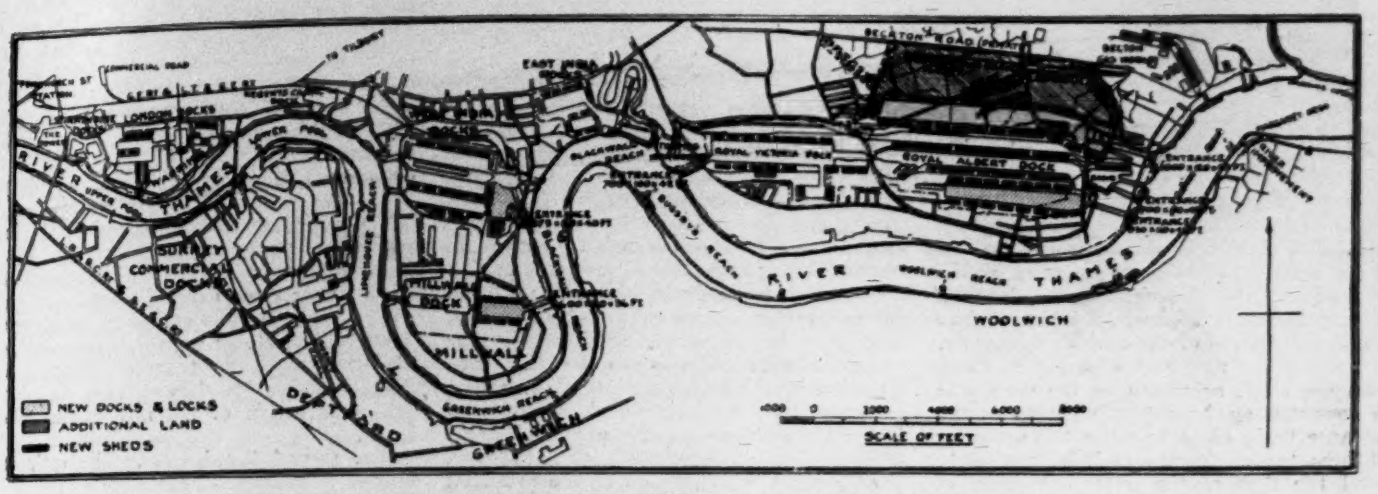


Fig. 1. Port of London: General Plan, Showing Proposed Improvements.

THE PORT OF LONDON.

IN view of the improvements completed, in progress, and projected at various important British seaports, and bearing in mind the extensive schemes that have been introduced within recent years for the development of Continental ports, it is particularly satisfactory to find something at last is going to be done for London. The report by Mr. E. Palmer, Chief Engineer to the Port of London authority, proposes improvements between London Bridge and Tilbury, involving an immediate outlay of nearly four millions, and an ultimate outlay of about 14½ millions.

Mr. Palmer traces the history of dock construction on the Thames from the first work of the kind down to the completion of the Tilbury Docks in 1886, a date marking the commencement of the period of inactivity which has now prevailed for twenty-five years. The docks at present in existence are represented in Fig. 1, where also are shown the improvements discussed later.

"Howland's Great Wet Dock," built in the XVIIth century, enclosed about 11 acres of water, and was provided with an entrance lock 150 ft. long by 44 ft. wide by 17 ft. deep at high water. This pioneer work was followed in 1802 by the West India Docks, the foundation-stone of which was laid by Pitt. Of the three magnificent docks in this property two are almost deserted simply because the entrances are too small and the depth of water insufficient for modern shipping. The first London dock, built by Rennie, and opened in 1805, has two river entrances, one practically out of use save for barges and small craft, and the other, constructed in 1858, is quite inefficient because of an inner passage of smaller dimensions. The Wapping Basin, opening out of the first, now termed the Western, dock, will at present accommodate only one ship owing to its inconvenient shape and narrow quays, the Eastern Dock and Shadwell Basin, two later additions to the London Docks, suffer from insufficient quay, berth, and shed accommodation.

The East India Docks, opened in 1806, have a river entrance of ample size for vessels of the tonnage likely to use them, but the largest dock is inaccessible to all except small craft, because the interior entrance passage is considerably smaller than the river entrance.

St. Katharine Docks, on the site of the Hospital, founded in 1148 by Matilda of Boulogne, and church of the same name, were opened in 1828, and being used by small trading vessels, may be regarded as of adequate size, especially as the surrounding warehouses forbid enlargement, and the depth of the river prohibits access to large steamers.

The Royal Victoria Dock, opened in 1855, and capable of being converted into a fine modern dock, is at present incapable of receiving vessels of more than moderate size owing to its small depth, while its original entrance is unsafe and only operated for the admission of barges.

Millwall Dock, opened in 1866, is both narrow and shallow, but at present appears to be fairly suitable for the grain-carrying traffic, for which it is chiefly used.

Tilbury Docks, opened in 1886, represent the last word in dock construction on the north side of the Thames, and are a quarter of a century behind the times. Favoured by greater depth of water than that prevailing higher up the river, they are open to larger steamships, but the accommodation provided is quite inadequate for the largest modern vessels.

On the south side of the river, the Surrey Commercial Docks, opened in 1855, at present meet the requirements of the trades

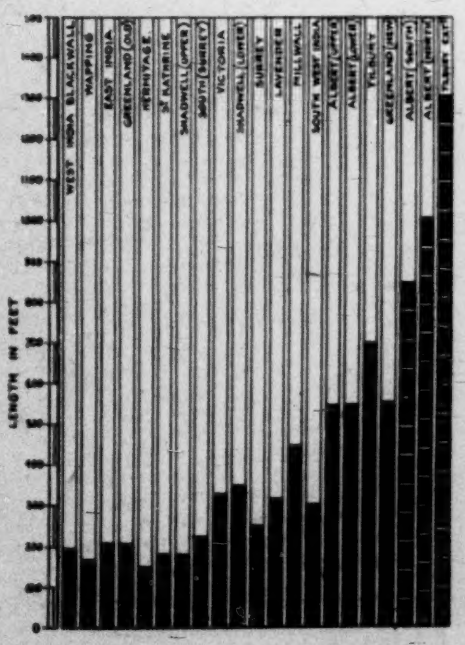


Fig. 2. Port of London: Length of Existing and Proposed Dock Entrances.

concerned, and enjoy the advantage of including the most recent example of dock construction in the Port, the Greenland Dock, opened in 1904.

The foregoing summary of existing docks in the Thames is sufficient to show the moribund state into which things had been allowed to lapse owing to divided ownership among commercial undertakings having no direct interest in the development and prosperity of the Port as a whole.

As a further indication of this lamentable condition we may point out that, as may be judged by reference to Fig. 2, practically the whole of the Colonial, American, and other ocean traffic has to be crowded into the Albert, Tilbury, and Greenland docks, as none of the others are capable of admitting the vessels used in these important departments of trade. During the recent period of inaction the average size of the largest vessels has increased from 450 ft. to 700 ft. in length, from 52 ft. to 77 ft. in beam, from 28 ft. to 35 ft. in draft, and from 7,000 to 24,500 in gross tonnage.

This unsatisfactory state of things was mainly responsible for the constitution of the new Port Authority, and the able report by Mr. Palmer points out the way to reform in clear and convincing terms.

The first requirement, of course, is a navigation channel of width and depth sufficient to enable ships to reach the docks. This matter is already receiving attention; and in Fig. 3 we show the scope of the dredging operations, now in progress with the aid of plant which has involved an outlay of about half a million.

Although the improvements recommended in the report are not put forward for execution all at once, but as component parts of a scheme for progressive realisation, we deal with the whole of them in the following outline, beginning at Tower Bridge and ending at Tilbury.

St. Katharine Dock, for reasons previously stated, will be left untouched. At the London Docks the improvements proposed include a new arm to the Western Dock, the widening of the locks to the Tobacco Dock between the Eastern and Western Docks, the remodelling of the Wapping Basin, and the provision of new quays, jetties, and sheds, the total cost being estimated at 602,000*l*. On the other side of the river the Surrey Commercial Docks are considered to comply with present needs.

The West India Docks, covering an area half as large again as that of Tilbury Docks,

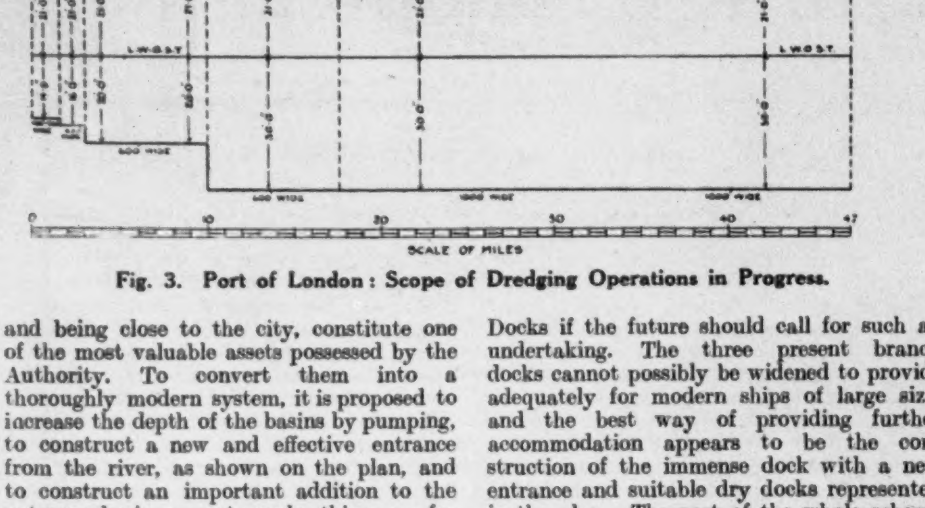


Fig. 3. Port of London: Scope of Dredging Operations in Progress.

and being close to the city, constitute one of the most valuable assets possessed by the Authority. To convert them into a thoroughly modern system, it is proposed to increase the depth of the basins by pumping, to construct a new and effective entrance from the river, as shown on the plan, and to construct an important addition to the entrance basin so as to make this serve for all three docks. Here, also, it is proposed to build the first of the important series of dry docks, accommodation in which the Port is hopelessly deficient. Quay widening, sheds, mechanical equipment, and improved railway tracks complete the category, which involve an expenditure of 1,105,000*l.*, an amount very small in comparison to the advantages to be gained by the conversion of three partially derelict basins into effective modern docks.

Millwall Dock can only be fitted for larger vessels by either complete reconstruction, or the addition of a new dock with separate entrance, as represented on the plan, at the total estimated cost of 747,400*l.* Neither alternative is pressing, but Mr. Palmer justly urges that the existing dry dock should be at once increased to the length of 550 ft., at the cost of 12,700*l.*

At the East India Docks the narrow interior passage shutting out vessels of moderate size from the main dock would be widened and deepened, the outlay, including deepening the docks, improving quays, and building new sheds, being put at 268,000*l.*

The Royal Victoria Dock, now inaccessible to shipping save through a narrow and shallow passage from the Royal Albert Dock, requires deepening from 25 ft. 6 in. to 38 ft. 6 in., the construction of a new entrance, a new dry dock, quay reconstruction, and new sheds, the cost being estimated at 1,305,000*l.* The Royal Albert Dock, thirty years ago considered to be the finest dock in the world, merely wants deepening and providing with an ample entrance to make it once more worthy of its splendid situation. The total expenditure foreshadowed in the report is only 615,000*l.*, this amount providing for quay improvements and a new dry dock, 700 ft. long by 80 ft. wide by 30 ft. deep. Two important additions proposed to the same property are the North and South Albert Docks, the former 7,400 ft. long by 700-1,000 ft. wide by 45 ft. deep, and the latter 4,600 ft. long by 500-700 ft. wide by 44 ft. 6 in. deep. These docks and their entrances would be capable of use by the largest ships afloat or projected, the cost, including large dry docks, new sheds, and equipment, amounting to 6,936,000*l.* If executed, the project would at once place London in the position of being able to deal with the largest ships afloat or projected in the very heart of the Port, a position far superior to Tilbury in respect of traffic facilities and general convenience.

With regard to Tilbury Docks, Mr. Palmer adopts the judicious view that no works of importance should be undertaken unless found to be necessary after the Victoria and Albert Docks have been modernised and extended. Hence the improvements shown in Fig. 4 are merely to be taken as indicating what might be done for extending Tilbury Docks if the future should call for such an undertaking. The three present branch docks cannot possibly be widened to provide adequately for modern ships of large size, and the best way of providing further accommodation appears to be the construction of the immense dock with a new entrance and suitable dry docks represented in the plan. The cost of the whole scheme is estimated at 4,860,000*l.*, or 2,618,000*l.* if only the shaded portion of the proposed dock were built.

One very desirable addition, however, would be the pontoon landing-stage, 1,500 ft. long, for passengers. This stage, designed on the lines of Prince's Landing-Stage, Liverpool, and equipped with commodious waiting-rooms and sheds, would allow two large steamships to come alongside simultaneously, and an extension of existing railway lines would enable passengers to travel between Tilbury and Fenchurch-street in thirty-five minutes, and St. Pancras in forty-five minutes. The cost of this most convenient work would be about 230,000*l.*

Having now briefly reviewed the proposals made, we may again refer to Fig. 2 as denoting the advantages to be derived from the seven new dock entrances proposed, ranging from 575 ft. by 80 ft. by 40 ft. deep at the West India Docks to 1,300 ft. by 130 ft. by 55 ft. deep at Tilbury Docks.

At present there are only four dry docks in the London area, and two at Tilbury—a truly disgraceful record for the first Port in the world. These docks range in size from 375 ft. by 64 ft. by 21 ft. deep to 501 ft. by 66 ft. 4 in. by 22 ft. deep in London, and of the two at Tilbury one is 846 ft. by 66 ft. 9 in. by 30 ft. deep (although only taking vessels not more than 650 ft. long) and the other is 846 ft. by 77 ft. 9 in. by 35 ft. deep. The report proposes nine new dry docks, ranging from 575 ft. by 80 ft. by 25 ft. deep to 1,300 ft. by 130 ft. by 45 ft. deep.

The aggregate outlay involved in the proposals made amounts to 14,426,000*l.*, but it is recommended that the work should be spread over three successive periods.

The first instalment at the estimated cost of 3,896,700*l.*, includes urgently required works at the London, West India, Millwall, and Albert Docks, the largest item being for the construction of the new South Albert Dock.

The second instalment at the estimated cost of 5,722,000*l.*, covers work at the West India, Albert, and Victoria Docks, and the Tilbury Landing-Stage, the chief item being for building the new North Albert Dock.

The third instalment at the estimated cost of 4,808,000*l.*, covers the first part of Tilbury Dock extension, and various items not included previously.

As the first series of works will probably require about five years for their execution, the subsequent programme may be modified by future developments of trade.

We should not like to suggest when a start will be made on the works foreshadowed, but from the serious and businesslike manner in which the Port Authority have undertaken the duties of their great trust, we have every hope that the first series of improvements will be taken in hand at a reasonably early date.

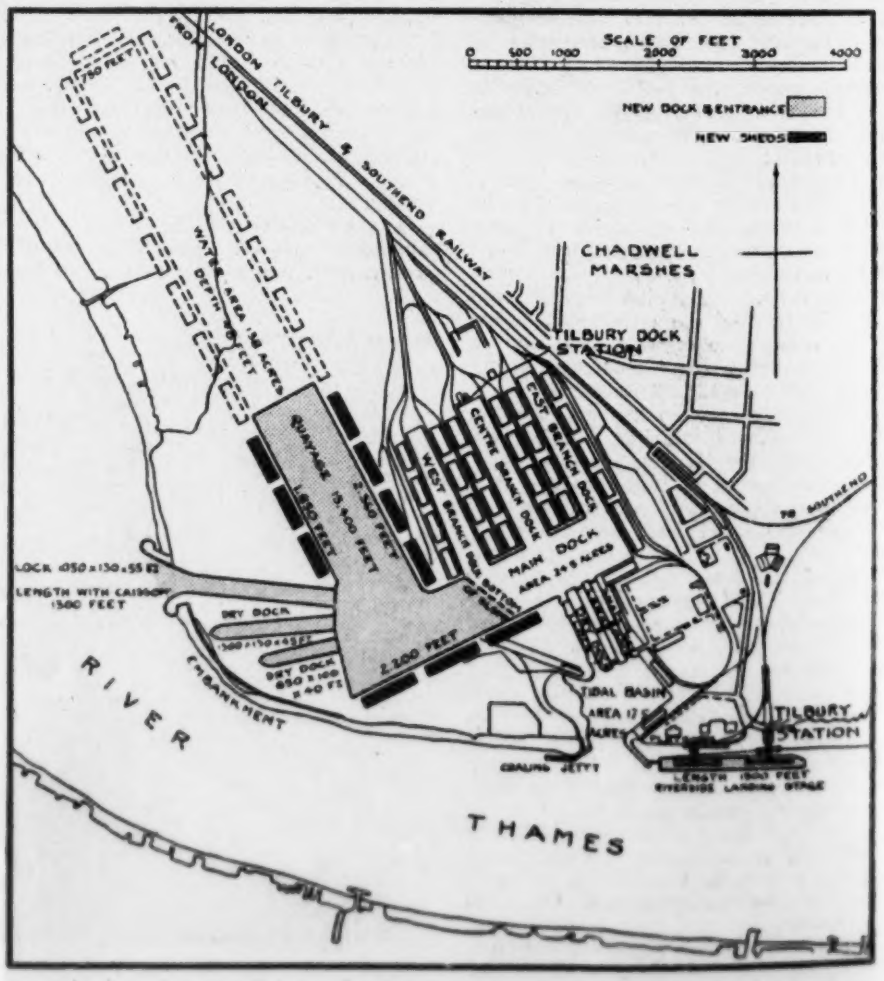


Fig. 4. Port of London: Proposed Improvements at Tilbury Docks.

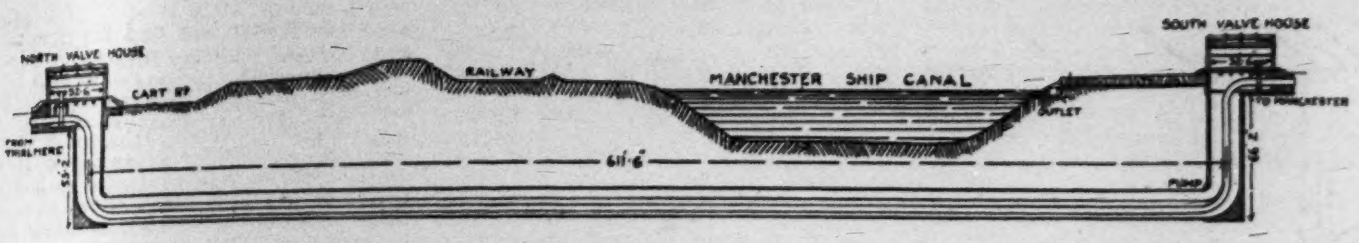


Fig. 1. Manchester Water Supply: Siphon under the Ship Canal.

MANCHESTER WATER SUPPLY.

WHEN the waterworks at Longdendale were commenced in 1848, the joint population of Manchester and Salford was, approximately, 350,000 persons, and when they were finally completed in 1884 the population of the sister towns had risen to fully 570,000, and the rate of increase continued so rapidly thereafter that in 1877 the need for additional sources of supply became very obvious, but nothing was done until the Thirlmere works were commenced in 1890 and the first aqueduct completed in 1894.

From 8 million gallons in 1853, the daily consumption of water in Manchester grew to nearly 19 million gallons by 1881, and was increased in 1894 by 10 million gallons through the first pipe line from Thirlmere, bringing up the total to about 29 million gallons daily.

Further demands soon brought up the supply to 32 million gallons, and on the opening of the second Thirlmere pipe line the consumption had reached 33 million gallons daily.

Last year the average daily consumption had increased to 41·68 million gallons, of which 24·24 million gallons came from Longdendale, and 17·44 million gallons from Thirlmere.

In 1908 the Water Department commenced laying a third pipe line from Thirlmere. This work, now approaching completion, will provide for the additional supplies needed during the next few years, but the great problem ever before the Water Department will only be set aside temporarily and not finally solved.

Manchester already has to supply water for a population of 1¼ millions, including the city itself, Salford, numerous townships and villages in Greater Manchester, and various towns and districts, including Atherton, Carnforth, Chorley, Croston, Lancaster, Lunesdale, Preston, Tyldesley, Walton-le-Dale, and South Westmoreland. What the extent of future demands may be it is difficult to predict, but the day will evidently come when the resources of the present collecting areas will be taxed to their full capacity.

The new pipe line from Thirlmere terminates at Audenshaw Reservoir, and in addition to crossing numerous railway lines passes under the Manchester Ship Canal near Barton Bridge. The siphon, of which a section is given in Fig. 1, comprises two vertical shafts, each with a valve-house, of dimensions adequate for the accommodation of three 40-in. diameter mains. The subway connecting the two shafts is 611 ft. 6 in. long, the Thirlmere or north end being at sea level, and the Manchester or south end 16 in. lower. Both shafts and the tunnel are of 15 ft. 6 in. diameter and 14 ft. 6 in. diameter inside the cast-iron lining, each ring of the latter in the subway consisting of nine segmental plates 1¼ in. thick by 20 in. long, while in the vertical shafts the lining consists of eight segments 3 ft. and 4 ft. long, and of the same thickness as in the subway.

At each end of the siphon a 40-in. sluice valve will be fitted, having slow and quick gearing for operation by hand, these valves being designed so that they can be readily opened under the working head of 350 ft., about 151 lb. per square inch. Two sets of hydraulic engines and pumps will be installed for emptying the siphon when required, each of these being capable of raising 4,000 gallons per hour to the height of 72 ft.

Another notable addition to the resources of the Water Department will be represented by the new reservoir at Heaton Park with the capacity of 500 million gallons. This work was commenced in 1907, and should be finished before the end of next year.

The site of the reservoir is partly within the boundaries of the park, which was bought by the Manchester Corporation in 1902 from Lord Wilton, and, extending to more than 690 acres, is the largest public park in the city boundaries. The work of construction has been considerably facilitated by the contour of the ground, the place selected for the reservoir being a natural hollow surrounded by elevated land of varying height. The embankment is formed of clay excavated from ground destined to constitute the interior of the reservoir, the material being puddled in timber moulds and afterwards pitched with stone.

As indicated in Fig. 2, the water supply will come from Thirlmere with that delivered to the two reservoirs at Prestwich, of 20 and 21 million gallons capacity each, and the outlet pipe will discharge into the existing mains at Bury Old-road. The inlet and outlet pipes, of 40 in. and 30 in. diameter respectively, have already been laid.

The direct object of the Heaton Park Reservoir is to provide additional storage, and so to make the Water Department more independent than heretofore of possible breakdown in the supply from Thirlmere. Apart from serious mishap, repairs and alterations are always in progress at different points in the pipe lines, making it necessary to shut down the valves at Thirlmere once or twice every month, and to rely upon storage reservoirs for current needs.

The new storage reservoir will extend by fully twelve days the period for which Manchester and district could hold out against drought, and offer an assurance of security which should be greatly appreciated by the great industries affected and the population at large.

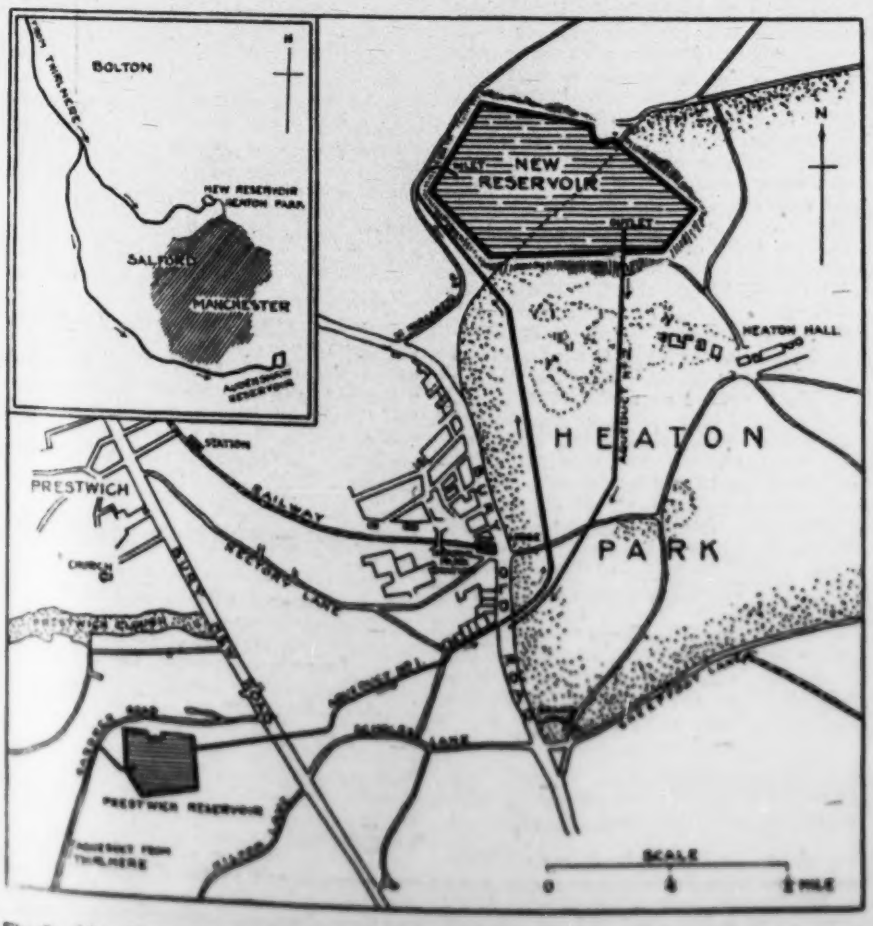


Fig. 2. Manchester Water Supply: Plan of Heaton Park Reservoir and New Aqueduct.

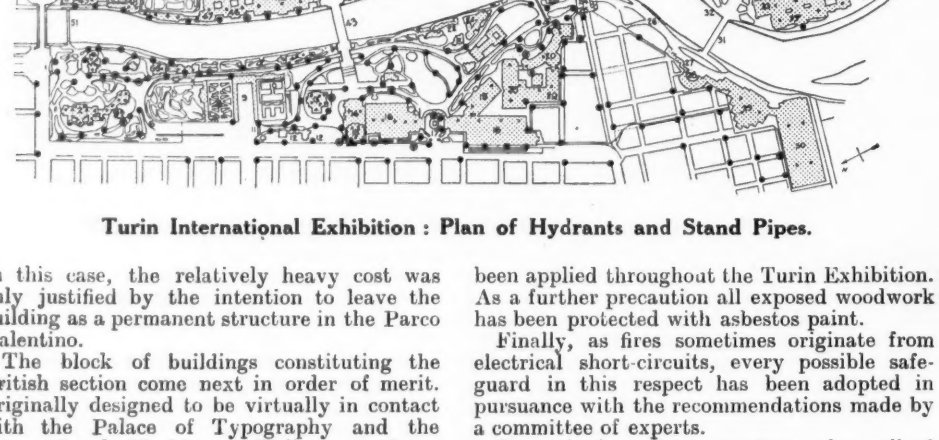
FIRE PRECAUTIONS AT THE TURIN EXHIBITION.

IN view of the disastrous fire at Brussels it is important to inquire as to the precautions that will be taken to prevent any similar occurrence at the Turin International Exhibition, of which a general account was given in our issue of January 27, and where this country will be the most prominent among other participating nations.

A favourable omen may be construed from the past records of exhibitions in Turin, not one of these having suffered in any way from fire. The authorities of that city pride themselves on the excellent organisation which has enabled them to secure immunity in the past, but, after the experience of Brussels, additional safeguards are being provided.

We are glad to recognise the efforts made by the Executive Committee of the Exhibition to protect the property of their guests, and equally pleased to be able to announce that exceptional precautions have been adopted by the Board of Trade Exhibitions Branch, in addition to those of the Italian Executive.

Dealing first with the structural aspect of the question, the Palace of Typography is the only absolutely ideal fire-resisting building, this being of reinforced concrete throughout.



Turin International Exhibition : Plan of Hydrants and Stand Pipes.

In this case, the relatively heavy cost was only justified by the intention to leave the building as a permanent structure in the Parco Valentino.

The block of buildings constituting the British section come next in order of merit. Originally designed to be virtually in contact with the Palace of Typography and the International Machinery Hall, a roadway 16 ft. wide has been formed completely round them, except at one place where a fire-resisting wall 3 ft. thick by 150 ft. long serves as a barrier between the British and the International Machinery Hall. This fire-wall rises 2 ft. 7½ in. above the corrugated-iron roof, and the six openings left for the circulation of visitors are fitted with fire-resisting doors of approved design, having counterweights so that each of these massive screens can be shut down with the greatest ease and rapidity in case of emergency.

To obviate the presence of unpremeditated flues beneath the timber flooring, earth has been compactly rammed between the original ground surface and the boards, this body of earth being held in place by a line of 9-in. brick walls entirely around the section.

All the interior walls are faced with hollow bricks 1½ in. thick rendered with a ⅜-in. coat of plaster, and similar protection is provided for door and window frames. Columns which, owing to their circular form, cannot be sheathed in hollow brick, are enclosed by a coat of fire-resisting plaster laid 1½ in. thick on wire netting. All ceilings in the Hall of Honour and the galleries on either side are covered with metallic lathing and a substantial layer of fire-resisting plaster; terrace roofs are protected by galvanised iron, and the woodwork of doors and windows is covered with asbestos paint.

Indeed, so thoroughly has the work of fire-protection been carried out, that the British section may almost be regarded as a structure of permanent character.

Like the British Machinery Hall and other galleries behind the front building, several important structures at Turin are mainly built of steel, their contents being largely of incombustible character and the risk of fire correspondingly small.

The remaining structures, in spite of the illusory appearance of solidity they present after completion, consist of a light timber skeleton faced with plaster or the combination of plaster and canvas, technically known as "staff."

Unlike the timber framework commonly adopted in this country, the skeleton work at Turin is built up of fir trunks as uprights and beams, and the panels are filled in with cane network, which affords a good tooth for plaster.

Even in the natural state, whole tree stems are far superior to sawn timber in respect of fire-resistance, and their suitability at Turin is further increased by treatment with a chemical solution, which has also been applied to all the canework.

The solution employed is one of two selected as the best and most effective brought forward as the result of an international competition inaugurated during the year 1907 with the present Exhibition in view. Although the solution is merely sprayed over the interior and exterior woodwork, it is regarded as being quite efficient. We are strongly of opinion that the only proper course is to impregnate the timber beforehand in accordance with processes available, but, unfortunately, too seldom adopted in this country.

The other solution approved by the Committee conducting the competition is one for the treatment of textile fabrics, and this has been applied throughout the Turin Exhibition. As a further precaution all exposed woodwork has been protected with asbestos paint.

Finally, as fires sometimes originate from electrical short-circuits, every possible safeguard in this respect has been adopted in pursuance with the recommendations made by a committee of experts.

From the foregoing notes it may be realised that the constructive part of the fire-protection problem has by no means been neglected by the Italian and British Executive.

Turning now to fire-fighting equipment, there is a storage reservoir with the capacity of nearly 4,500,000 gallons in connexion with the Water Palace. Situated at an elevation insuring the pressure of 90 lb. per square inch, this reservior will be kept always full and connected to a comprehensive installation of fire mains in every part of the Exhibition.

The accompanying plan, where the buildings are numbered for identification as on the plan given in our preceding article (January 27), shows the positions of hydrants and fire alarms throughout the Exhibition. Hydrants are to be found, with hose in readiness, at intervals of about 38 yards apart, and the electric fire-alarm system is such that on one alarm being sounded all the bells will ring and the danger zone be at once indicated. Warning will also be given by the same means at the twenty fire stations in the city, and at the barracks close to the Exhibition, where sappers and engineers are quartered. The accompanying plan indicates the complete manner in which the Exhibition is equipped with hydrants inside and outside the buildings.

Every night 1,200 watchmen will be on duty, in addition to those provided by the various nations taking part in the Exhibition. Each watchman will have his allotted beat, and in case of fire will make use of the nearest hydrant after sounding the alarm, while the other watchmen, already trained for such eventualities, will proceed to his assistance.

The city fire brigade, having excellent equipment, includes twenty-six non-commissioned officers and 200 men commanded by a retired army officer. The nearest fire station is within three minutes drive of the Exhibition, and proximity of sappers and engineers with material for pulling down or blowing up parts of the buildings for the purpose of isolation is an additional element of security.

In the British section, the Board of Trade officials have supplemented the precautions of the Italian authorities by the British fire brigade which proved so useful at Brussels, the provision of a separate water supply, and the installation of thirty additional hydrants, making a total of fifty-six in the section. The British water supply will be drawn from the river by two pumps capable of discharging 1,000 gallons per minute. Special attention has been devoted to the question of short-circuiting, and the exterior of the buildings is protected by a complete system of lightning conductors.

It would be difficult to suggest any further safeguards for protection of the buildings and their contents, and that anything like the Brussels disaster will occur at Turin is obviously a very remote contingency.

THE INDUSTRIAL USES OF HIGH-PRESSURE GAS.

MOST of our readers are familiar with high-pressure gas lamps, but the remarkable work which has recently been achieved with high-pressure gas as a furnace fuel is not so well known. At Woolwich Arsenal high-pressure gas furnaces have been used for some time past for annealing large masses of metal, and in London tons of type-metal are daily melted in high-pressure gas furnaces; but the melting by gas of large quantities of nickel, a metal having a melting-point much higher than that of gold or of cast-iron, is an achievement which was regarded as impracticable until quite recently. Now, however, the difficulty of obtaining the necessary high temperature has been overcome by using gas under very high pressure.

A gas furnace compared with a coke furnace has the advantages that it is more easily and speedily brought to the required temperature, that the temperature of the furnace can be kept practically uniform for any length of time, and that the fuel does not leave any ash. But with low-pressure gas and air it has been impossible to obtain the high temperature required for the melting of large masses of metal of high melting-point, and hitherto gas furnaces have been used only for melting metals of low melting-point or for melting very small quantities of metals of high melting-point.

High-pressure gas has, moreover, been found more economical than low-pressure gas, and it has already displaced coke as a fuel in many instances, and there are indications that its use will extend rapidly during the present year.

Instead of using gas under high pressure, the gas may be used under low pressure, and the air required for combustion of the gas may be supplied to the burner under high pressure. The object is to obtain the maximum flame temperature by consuming as much gas as possible in a flame of the required dimensions. If the gas is under high pressure the injecting action of the jet of gas will draw as much air into the combustible mixture as it requires, while if the air is forced into the mixing chamber of the burner under high pressure a similar result is obtained. Both methods of obtaining a high flame temperature are now being largely used, and the new furnaces are merely developments of old forms of blast furnaces.

A few weeks ago some interesting figures concerning the cost of melting metals with high-pressure gas were given in a paper read before the London and Southern District Junior Gas Association by Mr. L. F. Tooth, and some of his figures are shown in the following table :—

—	Melting Point °C.	Cubic feet of Gas used per lb. of Metal.	Gas Pressure in inches of Mercury.
Lead	326	0·28	10
White Metal	420	0·5	10
Aluminum	628	2·8	12
Brass	900	2·8	14
Silver	954	2·9	14
Gun-metal	1,000	3·2	14
Gold	1,045	3·6	14
Copper	1,054	3·7	14
Cast-iron	1,075	6·6	14
Nickel	1,550	30·7	24

It is not suggested that finality has been reached in the economical application of gas to metal melting, but so little information relating to the cost of high-pressure gas as a fuel has been published that Mr. Tooth's figures will serve for the present as a useful guide to all interested in the heating of metal furnaces.

ENGINEERING NOTES.

Detroit River Tunnel. At the ordinary meeting of the Institution of Civil Engineers on the 7th inst., Mr. Alexander Siemens, President, in the chair, the paper read was "The Detroit River Tunnel Between Detroit, Michigan, and Windsor, Canada," by Mr. W. J. Wilgus, M.Inst.C.E. The electrically-operated tunnel beneath the Detroit River for connecting the Michigan Central Railroad, in Detroit, with the Canada Southern Railway in Windsor, was successfully completed and opened for the passage of the first train on July 26, 1910. This was four years after work had been actively commenced, and at the close of over half a century's striving for means of linking together the lines of railway between east and west, *via* the north shore of Lake Erie. The tunnel

contains two tracks, and measures about 2½ miles between summits, and 8,310 ft. from portal to portal; it has a clear headroom of 18 ft. above rail-level. Local conditions led to the adoption of a novel method of subaqueous construction, by means of which the capital cost and hazard to human life and health were greatly reduced, and economy of operation was subserved by the lessening of the vertical ascent for trains. In this method steel tubes in pairs were built on land, launched, towed into position, and sunk into a previously-excavated trench; there they were suitably connected, adjusted to line and level, and entirely surrounded by concrete deposited under water by the "tremie" process. Later, after the concrete had hardened, the tubes were successively pumped out, and the inner ring or lining of concrete was constructed in the dry without the use of compressed air. This procedure obviated the necessity of placing the tunnel some distance below the bed of the stream, as would have been necessary with the shield method, and permitted the top of the tunnel actually to project above the river-bed to the limiting level established by the United States and Canadian Governments. The design of the track used in the tunnel departs from the usual practice in that it dispenses with the use of ballast and thereby lends itself to economy of maintenance and to cleanliness. Especial care was taken in the interests of safety to secure sound rails, thorough drainage, suitable signalling and interlocking, and other protective features for emergency use. The completion of this improvement, costing, with contiguous work, between 10,000,000$ and 15,000,000$ (2,000,000*l.* and 3,000,000*l.*), has brought to the public greater safety, reliability, and speed of service; for the substitution of a spacious and substantial tunnel has removed the uncertainties and dangers incident to car-ferriage across a waterway encumbered in summer and autumn with a traffic of about 60,000,000 tons annually, and rendered hazardous in winter by storms and ice.

Cost of Cutting Metal with Oxygen.

It is stated that on a recent occasion one man employed by the Knowles Oxygen Company cut through forty-two 15-in. by 5-in. I-beams at the Smallheath railway sidings, Birmingham, in four and three-quarter hours. The total cost for the forty-two cuts was as follows:—

	s.	d.
Oxygen, 200 cub. ft. at 2*l.* per 1,000 cub. ft.	8	0
Hydrogen, 300 cub. ft. at 1*l.* „ „	6	0
Labour, 4¾ hours at 1s. per hour	4	9
Total	18	9

The Chingford Reservoir.

Works already executed by the Metropolitan Water Board offer reasonable assurance against the shortage of water in the east of London, as happened in 1898. An additional safeguard, in course of completion, is represented by the immense new reservoir at Chingford. This important undertaking, with the water area of 416 acres, will store 3,000 million gallons, or enough to supplement existing supplies by 30 million gallons daily. The reservoirs in use at present for the eastern division of London have an aggregate capacity of nearly 2,500 million gallons. The fact that the total supply available for the East End is far greater than the combined output from the Manchester waterworks will be, even after completion of the third pipe line from Thurlmere, is sufficient to illustrate the gigantic task imposed on the Metropolitan Water Board, and to make clear the admirable results attainable by the intelligent utilisation of strictly local sources of supply.

A New Photometer.

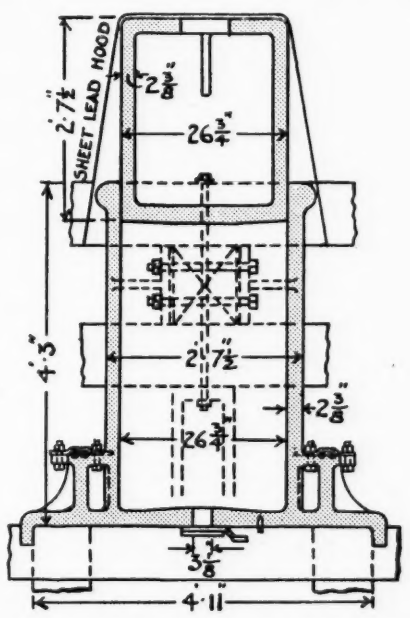
While the usual type of photometer is employed to determine the brilliancy in candle feet of any source of illumination, it cannot be applied to measure the luminosity of objects reflecting light. The instrument introduced by Messrs. R. & J. Beck, of Cornhill, under the style of the "Holophane Lumeter," combines both functions, but as ordinarily supplied is only available for the last mentioned purpose. It is in the form of a small box with an eye-piece, and on looking into this is seen an illuminated disc with an opening at the centre. When the object whose brightness is to be measured is observed through the eye-piece and perforated disc it will appear either more or less brilliant than, or of the same brilliancy as, the surrounding part of the disc. Then, by moving a lever working along a graduated quadrant, the brilliancy of the illuminated disc can be reduced or increased until it is the same as that of the object under examination, and the brilliancy of the latter can be read on the quadrant in candle feet, the range of the scale being from 0·01 candle foot to 100 candle feet.

Among the purposes to which the Lumeter can be applied are—For ascertaining whether the light on printed papers is sufficient for reading without strain to the eyes; whether all parts of a room are adequately illuminated; for measuring the variation of light at different times, seasons, positions, and localities, the relative intensity of light and shade in pictures, and the absorption of light by glass or other transparent substances.

Test of a Sand Box for Bridge Erection.

In addition to their familiar use for striking bridge centring sand boxes can frequently be applied with advantage instead of screw or other jacks for lowering heavy steel girders upon the seats prepared for them. An instance of the kind was furnished by the erection of a steel span for the Sitter River bridge in Switzerland.

As represented in the section on this page the sand boxes there employed consisted of a cast-iron cylinder, 4 ft. 3 in. high outside and 4 ft. high inside, with the bore of 26¾ in., and a hollow ram, also of cast-iron, 2 ft. 7½ in. high, the outer surface accurately turned to fit the cylinder. The depth of sand in the cylinder with the ram



Sand-box used in erecting the Sitter Bridge, Switzerland.

in place was 39½ in., the escape hole in the bottom of the cylinder for running out the sand being of 3 3-16 in. diameter.

Before using the sand boxes on the Sitter bridge works one of them was subjected to tests in order to ascertain its supporting power and behaviour under load, and to obtain exact data on the settlement caused by different loads. The sheet lead hood shown on the drawing was for protecting the sand from moisture. From a diagram given in *Der Eisenbau*, it appears that the compression of the sand, as represented by the settlement of the ram, was 2½ in., the compression at intermediate points being approximately proportionate to the loads. On opening the valve at the bottom of the box the sand flowed out at a uniform rate under load, the same satisfactory behaviour being subsequently observed when the boxes were employed in lowering the steel span of the Sitter bridge.

Pressure Filters at Bolton Waterworks.

An installation of filters, operating under the pressure of 100 lb. per square inch, recently opened at Sweetloves, in connexion with the waterworks system of Bolton, includes sixteen filters of 8 ft. diameter with chemical apparatus fixed in a building about 70 ft. long by 36 ft. wide. The filters, with the aggregate capacity of 2,300,000 gallons per day of twenty-four hours, were supplied by Messrs. Mather & Platt, Ltd., Salford, the filtering medium consisting of graded quartz crystals. Special apparatus is provided in each filter for washing the filter bed with a minimum amount of trouble. The chemical apparatus includes tanks and pumps for injecting coagulating solutions into the water as found desirable in aid of the filtration process. From previous experience of similar filters it is anticipated that the installation will prove not only its high efficiency, but also insure considerable economy.

Re-creation of Chaldea.

For years past Sir William Willcocks, the original designer of the Assouan Dam, has been working hard to realise his great project for restoring the ancient prosperity of Chaldea, a fertile country ruined ages ago by a sudden vagary of the River Tigris. Many interesting ruins are still to be found of the irrigation works constructed ages ago, the wisdom and skill of early irrigation engineers being amply shown by these remains. A gratifying fact connected with the latest scheme is that the contract for building a large dam at the head of the Hindia branch of the Euphrates has been secured by a British firm.

Quebec Bridge.

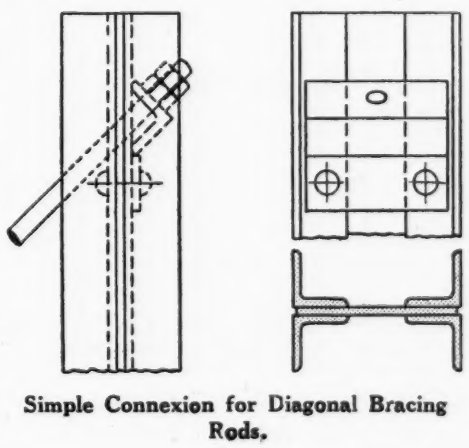
Further delay has arisen in connexion with the building of the cantilever bridge over the St. Lawrence River, owing to serious difference of opinion among the responsible engineers. Two additional experts have been appointed with the object of settling the controversy. The bridge, which so far has involved an outlay of more than a million and a half will probably not be finished until 1916.

Waterford Bridge.

Preparatory to the construction of the reinforced concrete bridge about to be built on the Hennebique system across the River Suir, at Waterford, the contractors are constructing a temporary wooden structure to provide for traffic between the city and Waterford North. The timber bridge is about 700 ft. long by 28 ft. wide between parapets, and has a 40-ft. opening span for navigation purposes. Although not begun until the middle of November last, the work is so far advanced that the bridge will probably be opened to traffic some time next month, this rapid execution being clear evidence of the resources at the command of modern contractors.

A Simple Connexion for Diagonal Bracing Rods.

The accompanying sketches illustrate a ready means of attaching steel rods used as diagonal bracing between stanchions as frequently necessary in building and kindred construction, and constitutes an efficient and economical substitute for the cast-iron or forged angle washers generally employed. The connexion merely involves a short angle-bar placed across the web of the stanchion, and held in place partly by the end of the bracing rod and partly by a flat bar riveted or bolted in the position shown. Any desired angle can be provided for by reducing the width of one leg of the angle bar, and when once fixed by the nut at the screwed end of the rod the connexion is perfectly secure.



Simple Connexion for Diagonal Bracing Rods.

THE BUILDING TRADE.

SCAFFOLDING.

CONSIDERING the antiquity and the great importance of scaffolding, it is somewhat remarkable that so little should have been written on the subject. The design and construction of scaffolding employed in the building industry are discreetly left alone by the architect, a course of action which the building contractor is quite entitled to regard as a practical compliment, although at the same time it has the effect of leaving him with the undivided responsibility of guaranteeing the adequacy and safety of the temporary structures erected for the purpose of realising the architect's designs.

Nevertheless, it has been the general custom hitherto for the builder to allow his foreman free scope in connexion with scaffolding, and the foreman is usually quite ready to delegate the whole matter to the scaffolder, who may or may not be worthy of the great trust so reposed in his constructive abilities. In some exceptional cases the scaffolding is carefully designed in the drawing office, much as the false works for engineering structures are designed, and occasionally a scaffold contractor is employed who is competent to make drawings providing suitably for the builder's requirements, as well as for safety and economy. The general rule, however, in spite of the additional legislative responsibilities which have been imposed on employers during recent years, is for the work to be relegated to scaffolders, and not infrequently to men having only a superficial knowledge of the craft.

It also happens that serious risks are caused by the use of defective materials and the employment of unskilled labourers for the erection of scaffolds. Hazards of this origin are almost entirely associated with the methods of speculative builders, influenced sometimes by carelessness, sometimes by motives of excessive economy, and sometimes by embarrassed financial circumstances which forbid the rejection of unsuitable materials supplied on credit. Reputable firms, however, with whom we class all builders who are among our readers, are particularly careful to provide for the safety of their scaffolding and the lives and limbs of their employees, and the exceedingly small number of scaffold failures actually occurring is sufficient to show that such precautions are not without effect.

At the same time, we must emphasise the point that the prevailing method of designing and erecting scaffolds is intrinsically wrong. The builder who allows important work to be executed by a man who plans in his head as he goes along, and who may be competent or incompetent, runs the risk of insecurity on one hand, and of unnecessary expenditure on the other. Considering the severe competition that prevails in the present day, we are sure that builders would find it advantageous in every way to take into their own hands the design of scaffolding and to replace traditional rules and rule-of-thumb methods by the principles governing scientific construction.

The average scaffold erector has not usually received technical education qualifying him to identify and resolve the forces acting upon the structures which he is called upon to design. If an experienced hand, he knows that a single pole will sway in one direction or another unless firmly embedded in the ground or held upright by some other means, but he is unable to compute the moment of rotation due to a given wind pressure, to resolve the horizontal component of other forces, and so arrive at the consequent moments tending to cause rotation about the fixed end of the pole, or to determine the procedure by which the corresponding moments of resistance may be accurately established.

Again, considering a scaffold composed of standards, ledgers, and putlogs, tied so as to make secure but flexible joints and the putlogs wedged into the wall, we cannot expect any craftsman without technical education to gauge the forces tending to distort the series of rectangular panels or to draw the whole framework away from the building, nor can we expect such a man to proportion with any nicety the diagonal braces necessary to offer the requisite opposition to the forces in question. It must also be remembered that in practice ordinary scaffolds are never rigid however carefully they may be braced, and that distortion brought about by heavy concentrated loads may reduce the stability of the structure very seriously, and even if it is still capable of holding up, the strain on the ties, and consequently the amount of wear and tear will be excessive.

Well-authenticated records go to prove that defective materials are often used by inadvertence, and that men professing to be experts really have little or no claim to special knowledge of the craft. Where such conditions prevail, the risk of partial failures and mishaps is by no means inconsiderable; while, on the other hand, where all materials are perfectly sound and the scaffolder is really experienced, the tendency is towards excessive cost, the reason for this being that, knowing the nature of the dangers to be avoided, but not knowing how to calculate strains and stresses, the workman in charge of operations naturally tries to make everything safe by using more materials than are actually necessary.

In addition to questions connected with the theory of framed structures, the designer of every scaffold should be familiar with that branch of applied mechanics known as the strength of materials. He should be able to determine the safe resistance of poles, ledgers, braces, putlogs, and planks when applied as columns, struts, ties, and beams, under the varied load conditions for every practical case. Determinations of this nature clearly involve reliable data on the physical properties of timber and rope, as well as on the strength of tied and other connexions adopted.

Economical construction cannot be attained so long as design continues to be entrusted to ignorant men. The spacing and, consequently, the number of standards are directly governed by the weight carried by a scaffold. The thickness and weight of the poles employed may often be kept down by special attention to the efficiency of bracing and the rigidity of lashings or other means of making connexions. Light poles, either single or double, when applied as standards and tied to ledgers at intervals of about 5 ft. apart vertically from columns of great resistance, can be used economically for the largest scaffolds. Poles used as diagonal bracing may also be relatively light, while those applied as ledgers should be stouter because they are required to carry transverse loads as beams with the average span of about 10 ft. between the supports. Economy is also influenced very largely by the length of the poles themselves, long poles reducing the amount of lap and lashing, and thereby effecting a great saving in the quantities of timber, rope, and labour necessary.

The diversity existing in the design and construction of outside scaffolding for bricklayers is very marked, and in some counties the system differs materially from town to town. Divergencies of the kind, like the prevalence of local dialects in speech, distinctly suggest tradition rather than education as the predominant factor, and our opinion is that if builders would take under their direct control the design of scaffolding, marked improvement would become evident, incidentally leading to general uniformity of practice, and, what is of greater importance, to safer, more scientific, and more economical construction.

TRADE UNIONS AND THE LAW.

WE have recently received a little pamphlet, entitled "Trade Unions and the Law," by Mr. Walter V. Osborne and Mr. Mark H. Judge, in which, although the law of the subject is only slightly dealt with, will be found some pertinent observations on the relations of the unions to the Labour Party and to their members. Such comments as it contains on the law are mainly directed to the first of the Osborne cases, which was carried to the House of Lords. The effect of the judgments there delivered is now fairly well understood, but the decision in the second case involves questions of no less importance, and which are but imperfectly apprehended by the public, and as this is barely touched upon in the pamphlet it may be useful shortly to explain the position of trade union members under both decisions.

In the first case the Law Lords decided that the trade unions derived their powers from the Trade Union Acts, and that it was *ultra vires* those powers for the unions to raise funds for the purposes of political representation by a compulsory levy on the members.

Mr. Osborne, who was the plaintiff in this first action, was then expelled from his union, and thereby deprived of all further benefits from his union and of the contributions he had paid, and he then had further recourse to the Courts, seeking a declaration that his expulsion was illegal and *ultra vires*, as he alleged the real object of the union in expelling him was to punish him for the original proceedings he had taken against the union. The defendants in this action raised a technical defence that the Court, by reason of the Trade Union Acts, had no jurisdiction to entertain this suit, and at the trial the only question was, assuming these allegations to be true, had the Court jurisdiction to grant the plaintiff relief?—a question the Court was constrained to answer in the negative. This raises a very important point, as the law which enables the Courts to define the functions of trade unions, but is unable to protect any member who has set the law in motion from tyranny at the hands of the union, is certainly far from satisfactory.

It is necessary to see how this result is brought about. Without entering into the history of trade unions it may be said that such societies originally, under the common law, were illegal societies, as they were deemed to act in restraint of trade; their present position is, however, defined by the Trade Union Acts, which relieved them from being considered illegal on this ground, but subject to certain limitations. In legalising these hitherto illegal associations it was apparently, at the time when the first of the Trade Union Acts now in force was passed, *i.e.*, 1871, not considered advisable that the Courts should enforce what otherwise would have been contracts unenforceable on the ground of illegality, and accordingly sect. 4 of the Act of 1871 provided that nothing in that Act should enable any Court to entertain any legal proceeding instituted with the object of enforcing or recovering

damages for the breach of certain trade union agreements, amongst which was, "Any agreement for the application of the funds of a trade union." The result of this legislation is that if a trade union is one, the objects of which would be illegal but for the privileges conferred by the Trade Union Acts, then the Courts are deprived of jurisdiction over the contracts specified in the Act of 1871.

The union of which Mr. Osborne was a member was one of such societies, and upon the decided cases the Court was compelled to hold that if his expulsion were declared invalid the Court would, in fact, be enforcing "an agreement for the application of the funds of a trade union," as the decree would restore to him the benefits he had lost.

Such is a very brief summary of the questions involved in these decisions, and it may assist readers of the above pamphlet to a better appreciation of the matters it deals with. The labour leaders are fond of charging the judges with partiality in reference to the decision in the House of Lords, but they overlook the later decision of a judge of the Chancery Division directly in their favour, even when that decision *prima facie* bears hardly on those whom they desire to dominate.

One thing seems clear, that when the law relating to trade unions comes to be amended the first reform should be to give both trade union members and the public free access to the Courts, and thus to prevent intimidation.

MASTER BUILDERS' ASSOCIATIONS, etc.

The London Master Builders' Association Monthly Report.

The usual monthly meeting of the Council of this Association was held at Koh-i-Noor House, Kingsway, W.C., on Thursday, the 16th inst., under the chairmanship of Mr. Leonard Horner (President).

The audited accounts for 1910 were received from the Finance Committee and will be submitted to the general meeting on Monday, the 27th inst.

The Organisation Committee's Report was received, and although the matter is proceeding slowly, those districts that have been taken in hand have produced good results and many builders have become members. It is now hoped to proceed with the work of organisation much faster.

It was decided to supply copies of the *Architects' and Builders' Journal* to the ordinary members at the expense of the Association.

Other matters of interest were discussed.

Yorkshire Federation of Building Trade Employers.

The annual dinner of the Yorkshire Federation of the Building Trade Employers was held at the Grand Hotel, Sheffield, on the 16th inst. Mr. A. J. Forsdike, President of the Federation, in the chair, supported by the Lord Mayor of Sheffield (Alderman H. K. Stephenson), Sir John Bingham, Bart., Mr. J. W. White, Sunderland (President of the National Federation), Mr. S. Smethurst, Oldham (Past-President), Alderman W. H. Jessop, Huddersfield, Past-President, and others.

Mr. J. Dawson,

in proposing "The National Federation of Building Trade Employers of Great Britain and Ireland," expressed the desire of the employers to be just to the men, but urged the need of keeping a watchful eye upon social legislation. The Workmen's Compensation Act had been a noble thing, but there was not an employer of labour in England who would not say it had been woefully abused.

Mr. J. W. White,

in responding, observed that legislation now seemed to be playing such an important part in industrial affairs, that it was a question, to his mind, whether it was not becoming the most important part, and, therefore, it was desirable that a huge trade like the building trade should be organised up to the very hilt. Before the building trade adopted the Conciliation Board, four years ago, their usual condition was that, if they had not a strike or a lock-out, they were contemplating or endeavouring to avoid one. During the four years the Conciliation Board had existed, however, nothing of that kind had taken place. It had the effect of not only benefiting the builders, the architects, but the building owner, and the whole community, inasmuch as it brought about settlements without that resort to war, which was the usual thing they had before. That four years, however, had been four years of very great depression, and they had yet to test the strength of the Conciliation Board during periods of good trade. It would be well to be well organised, because, although they had not felt it, there was undoubtedly a spirit of unrest amongst many trades, which were kicking over the traces and showing a disposition not even to recognise their leaders. He was afraid they were getting too much legislation. They scarcely got time to digest it. He hoped the proposals for insurance against unemployment would not be rushed through Parliament. It was essential that in dealing with industrial matters, the trades affected should have the fullest opportunity of considering the Bill before it was passed into law. He was somewhat of the opinion that it would have been better had it been considered jointly with the Workmen's Compensation Act and the proposed Bill dealing with invalidity in sickness. It was a very fine point when a man ceased to be ill and when he commenced to be out of work. He was quite sure that the Compensation Act was not a success in the way they thought it ought to be. There was too much malingering.

Mr. S. Smethurst,

who proposed "The Yorkshire Federation" appealed to the builders of England to recognise that the policy of the future should be to build well. Referring to the development of the Doncaster district, he agreed with the Archbishop of York that it was a unique opportunity of trying to create villages or towns in such a way that, as Englishmen, they would be proud of it. Hitherto, their developments on that side had been in the hands of the worst of their class, often manipulated by sometimes unscrupulous lawyers, who began land jobbing, and used as their tools very indifferent builders, men who soon failed, and the consequence was they had brought into existence a class of property that in a very short time became slum property. Why should not new districts come into existence at the hands of reputable architects and reputable builders, with houses, without meretricious ornament, that should be good, and satisfactory and well built? The extra money spent in doing it initially would be more than met by the less cost of maintenance subsequently. Nothing paid worse than badly-constructed houses.

Mr. A. J. Forsdike,

in replying, remarked that, as President of the Local Conciliation Board, he was bound to say a spirit of fairness had been exhibited on the part of the men's leaders that at one time of the day they thought impossible.

The Lord Mayor,

in responding to the toast of the "City and Trade of Sheffield," proposed by Alderman W. H. Jessop, referred to the schemes that are before the city for the erection of a memorial to the late King.

Councillor Neal also responded.

Other toasts included the "Sheffield Master Builders' Association," proposed by Councillor W. G. England, and responded to by Mr. W. Longden; "Architects and Surveyors," proposed by Mr. J. Biggin and replied to by Mr. C. B. Flockton; and "Our Guests and Visitors," proposed by Mr. J. D. Cook, and responded to by Alderman Bennett and Mr. G. Stevenson.

TERRITORIAL DRILL-HALL AT SOUTHAMPTON.

A new drill-hall and other accommodation for the use of the Hampshire Royal Horse Artillery, the Hampshire Carabiniers Yeomanry, and the 3rd Wessex Field Ambulance of the Royal Army Medical Corps has been provided by the County Territorial Association on land at the back of Hamilton House, Commercial-road, Southampton. The work has been carried out by Mr. G. R. Long, builder, of Shirley, under the supervision of Messrs. Hair & Bucknill, architects.

GOVERNMENT CONTRACTS.

THE following tenders have been accepted during the past month by the Government Departments named: — *Admiralty (Works Department):* Works services, adapting buildings for accommodation of coastguard, Lerwick —Mr. J. M. Aitken, Lerwick; drainage at Royal Naval College, Osborne—Messrs. Brading & Son, Cowes; erection of the "Errol" Hall at Haslar, Portsmouth—Mr. J. Hunt, Cleveland-road, Gosport; erection of wireless telegraphy station, Scarborough — Messrs. Jaram & Son, 16, Gladstone-street, Scarborough; improved accommodation at coastguard station, Dover—Messrs. A. Tapley & Co., 139, Folkestone-road, Dover. *War Office:* Works services, accommodation for Army Service Corps, Bulford — Messrs. W. E. Chivers & Sons, 29, Sheep-street, Devizes; erection of annexes, Kingston-on-Thames—Messrs. Johnson & Co., 97, Southwark Bridge-road, S.E.; erection of drill and gymnastic hall, Gravesend—Messrs. W. P. Goose & Sons, 124, Milton-road, Gravesend; extensions to store and shops at mechanical transport depôt, Stanhope Lines, Aldershot—Messrs. Boulton & Paul, Ltd., Rose-lane Works, Norwich; foundations, floors, etc., for mechanical transport sheds, Bulford—Mr. E. T. Moore, 31, Harcourt-road, Redlands, Bristol; foundations, floors, etc., for mechanical transport sheds, Curragh Camp—Messrs. H. Laverty & Son, Ltd., 12, Cambridge-street, Belfast; improvements to married quarters, Hilsea—Messrs. Munday & Sons, 9, Botolph-lane, E.C.; supply and erection of new gas plant, Royal Small Arms Factory, Enfield Lock—Messrs. W. C. Holmes & Co., Ltd., Turn Bridge, Huddersfield; supply and erection of supports for velocity screens, Shoeburyness—Messrs. R. Moreland & Son, Ltd., 80, Goswell-road, E.C.; vehicle sheds, etc., Bulford—Messrs. Thomas & Edge, Woolwich; wiring of barrack blocks and W. D. buildings for electric light, Curragh—Edmonson's Electricity Corporation, Ltd., Broad Sanctuary-chambers, S.W. *Office of Works:* builder's work, Bishop Auckland, new post-office erection—Messrs. Middlemiss Bros., Stepney Bank, Newcastle-on-Tyne; Exeter Station, sorting office, enlargement—Messrs. Woodman & Son, Bartholomew Close, Exeter; Holloway money-order office, internal finishings—Messrs. Leslie & Co., Ltd., Kensington-square, W.; Ilford, new telephone exchange, erection—Messrs. Pasterfield & English, Sunnyhill-road, Streatham, S.W.; Westminster, new public offices, foundation vaults, etc.—Mr. F. G. Minter, High-street, Putney; Whetstone, sorting office, erection—Messrs. Clark & Sons, Abbey Building Works, Cambridge; ironwork, etc., Admiralty Block 4, gates and railings—Messrs. Hart, Son, Peard, & Co., Ltd., 138-140, Charing Cross-road, S.W.; Mount Pleasant parcel office, iron and steel work—Messrs Dorman, Long, & Co., Ltd., 19, Victoria-street, S.W.; National Gallery, west wing, dreadnought doors and shutters—Fireproof Doors, Ltd., 46, King William-street, E.C. *Metropolitan Police:* erection of a section house at Hunter-street—Messrs. Grover & Sons, Wilton Works, New North-road, N.; reconstruction of police-station and erection of a section house at Holloway—Messrs. Moss & Sons, Hendon. *Commissioners of Woods:* Pair of cottages, Delamere, Cheshire—Mr. William Wood, Hartford, Cheshire. *Commissioners of Public Works, Ireland:* Building works, erection, Kilvine National School, Co. Mayo—Messrs. Fleming & Sons, Longhill, Dunmore, Tuam.

AMENDMENT OF THE LONDON COUNTY COUNCIL'S STANDING ORDERS AS TO TENDERS AND CONTRACTS.

AT Tuesday's meeting of the L.C.C., the General Purposes Committee submitted a report on the question of the Council's requirements as to rates of wages of workmen employed on its contracts outside the twenty-mile radius prescribed by the standing orders. The report stated that:—

"The Highways Committee in 1907 experienced trouble with regard to certain contracts owing to difficulty in ascertaining whether the rates inserted by the tenderer in the schedule were those 'recognised by associations of employers and trade unions, and in practice obtaining in the district in which the work is to be done.' With a view to meeting this difficulty the practice has been established, although not prescribed by standing order, of requiring that, in all cases in which the rates and hours for work to be done outside the twenty-mile radius are not stated in the schedule to the tender, the necessary particulars shall be furnished by the tenderer for insertion in the wages schedule to the contract, and an assurance in writing obtained

that such particulars are in accordance with the rates and hours recognised by associations of employers and trade unions, and in practice obtaining in the district where the work is to be done. The solicitor advises that this is not a satisfactory solution of the difficulty, inasmuch as the assurance does not form part of the contract, and in the event of the particulars furnished being subsequently found to be incorrect the Council would have no satisfactory remedy. The solicitor has accordingly prepared a suggested form of declaration to be embodied in the tender, and the Highways Committee are of opinion that this should be adopted. The inclusion in the tender of such a declaration would ensure that Part II. of the wages schedule (relating to work outside the twenty-mile radius) would be filled up with the particulars of rates and hours at the time the particular tender is submitted. In order to render it more effective, however, the solicitor suggests that it should be supplemented by the insertion in the form of contract of a special new clause. The Highways Committee concur also in this suggestion."

The Committee submitted recommendations giving effect to their suggestions, and these the Council approved.

GENERAL BUILDING NEWS.

PROPOSED CHURCH, PARKFIELD-ROAD, LIVERPOOL.

The approved alternative design prepared by Mr. J. H. McGovern, architect, North John-street, Liverpool, for the erection of a church in the classic style, at an estimated cost of 5,000*l.*, on the Parkfield-road site, for the Methodist New Connexion, has been postponed.

REDFORD BARRACKS SCHEME.

Early in the month of December last tenders were issued by the War Office for the erection of the cavalry section of the new barracks at Redford, near Edinburgh. Over fifty contractors sent in offers. The contract has now been awarded to Mr. Colin Macandrew, Lauriston-gardens, Edinburgh. It involves the erection of the superstructure of the men's barrack blocks, stables, etc., in connexion with the cavalry barracks, and the contract price runs to upwards of 100,000*l.*

NEW BUILDINGS AT ABERDEEN HARBOUR.

The Lands and Fishings Committee of the Aberdeen Harbour Board has approved of the plans of the following buildings proposed to be erected on ground leased from the Board:—Sawmill at Commercial-road, for Messrs. George Gordon & Co., Ltd., per Messrs. Wilsons & Walker, architects; additions to premises at North Esplanade East, for Messrs. Williamson & Co., fishcurers, per Mr. George Cowie, builder; extension of fishcuring premises at Midchingle-road, for Messrs. John Lewis & Son; extension of fishcuring premises at Raik-road, for Mr. Charles Goodall, per Mr. John Cameron, architect.

KING EDWARD MEMORIAL AT LEITH.

The Directors of Leith Hospital have had before them plans by Mr. J M. Johnston, architect, Leith, for the erection of a colonnade in commemoration of King Edward and a statue of the late Monarch. The colonnade is estimated to cost 1,000*l.*, and will be 20 ft. high and fully 180 ft. long.

TRADE NEWS.

The Easton Lift Company, Ltd., Short-street, Southwark, S.E., have obtained from the holder the sole right to manufacture Carey's patent sesame self-opening and self-closing doors.

Under the direction of Mr. David Storrar, architect, Cupar, Fife, the "Boyle" system of ventilation (natural), embracing the latest patent "air-pump" ventilators and air inlets, have been applied to the Established Church, Kettle.

The Directors of Messrs. John Oakey & Sons, Ltd., in submitting to the shareholders their annual report for the year ending December 31, 1910, state that the net profits for the year as shown by the balance sheet, including 6,202*l.* 15s. 3d. brought forward, amount to 34,622*l.* 8s. 8d. The Board recommend the payment of a final dividend of 5 per cent. to the ordinary shareholders, making a total of 10 per cent. for the year; and in addition, a bonus of 5 per cent., free of income tax. They also recommend that 3,000*l.* of the year's profit be carried to the general reserve, raising this account to 83,000*l.*, making with the capital reserve a total reserve of 86,734*l.* 16s. 10d., leaving a balance of 6,872*l.* 8s. 8d. to be carried forward to next year. The Directors have appointed Mr. Philip Herbert Oakey (the eldest son of the Chairman, Mr. Herbert Oakey) to a seat on the Board.

The Day Training College, Richmond-terrace, Brighton, has recently been fitted with D. O. Boyd's "Hygiastic" school grates, supplied by Messrs. O'Brien, Thomas, & Co., of Upper Thames-street, London, E.C., and Excelsior Works, London, S.E.

The Shincliffe Small-pox Hospital, Durham, is being supplied with Shorland's warm-air ventilating patent Manchester stoves by Messrs. E. H. Shorland & Brothers, Ltd., of Failsworth, Manchester.

APPLICATIONS UNDER LONDON BUILDING ACTS, 1894 to 1909.

THE following applications were dealt with by the London County Council at its meeting on Tuesday (the names of the applicants are given between parentheses):—

Lines of Frontage and Projections.

City of London.—Retention of a projecting stone hood at the Monument railway-station, at the corner next to Eastcheap and Fish-street-hill, City (Mr. F. Sherrin).—Consent.

Hackney, North.—The erection of additions at No. 29, Clapton-common, Hackney, to abut upon the northern side of Osbaldeston-road (Mr. W. H. Hobday for Mr. C. C. Paine).—Refused.

Islington, South.—The erection of a lantern light in front of Nos. 393 and 393A, City-road, Islington (Messrs. J. Grundy, Ltd.).—Refused.

Kensington, South.—The erection of an addition to Harrod's Stores on the northern side of Hans-road, Kensington, and the re-erection of the "Friend at Hand" public-house (Mr. C. W. Stephens for Harrod's Stores, Ltd.).—Refused.

Lambeth.—Erection of a projecting porch in front of St. John's Church, Guernsey-grove, Herne Hill (Messrs. Treadwell & Martin).—Consent.

Marylebone, West.—Erection of stone balconies between the bay windows of four houses on the northern side of St. John's Wood-road, St. Marylebone (Mr. C. W. Boswell for Messrs H. & A. Harris).—Consent.

Newington, West—Erection of buildings upon the site of Nos. 165 and 167, New Kent-road, Southwark (Mr. S. A. S. Yeo).—Consent.

Paddington, South.—That the application of Messrs. Alder & Turril for an extension of the periods within which the erection of an addition at the flank of No. 17, Leinster-gardens, Paddington, to abut upon the northern side of Cleveland-square, was required to be commenced and completed, be granted.—Consent.

St. George, Hanover-square.—Erection of a porch in front of No. 13, Gerald-road, Westminster (Mr. F. J. Barrett for the Army and Navy Auxiliary Co-operative Society, Ltd.).—Consent.

Strand.—Erection of three stone balconies and a cornice to a proposed building, to be known as the London Opera House, on the eastern side of Kingsway and to abut also upon Sardinia-street and Portugal-street (Mr. B. Crewe).—Consent.

Width of Way.

Clapham.—That the application of Messrs. Lucas & Sons for an extension of the periods within which the erection of buildings on the north-eastern side of Clyston-street, Wandsworth, with a forecourt boundary at less than the prescribed distance from the centre of the roadway of the street, was required to be commenced and completed, be granted.—Consent.

Deptford.—Erection of a building at the rear of buildings on the western side of Deptford High-street at less than the prescribed distance from the centre of the roadway of Hyde-street (Mr. C. D. Cox for the Deptford Electric Palace, Ltd.).—Consent.

Hammersmith.—Erection of a building on the western side of Holcombe-street, Hammersmith, at less than the prescribed distance from the centre of the roadway of the street (Messrs. J. S. Quilter & Son for Mr. Bond).—Consent.

Whitechapel.—Erection of a portion of No. 52, Tenter-street South, Whitechapel, at less than the prescribed distance from the centre of the roadway of the street (Mr. H. Friedlander).—Consent.

Lines of Frontage and Construction.

Deptford.—That the Council, on the application of Mr. C. Beaton, do extend the licence, dated January 21, 1908, in respect of the temporary showcase in front of No. 340, New Cross-road, Deptford, for a period of three years.—Consent.

Deptford.—That the Council, on the application of Messrs. J. C. & F. Lardent, do extend the licence, dated January 21, 1908, in respect of the temporary showcase and sign in front of No. 342, New Cross-road, Deptford, for a period of three years.

Hackney, South.—The retention of an open wood and iron shed at Globe Works, Chatsworth-road, Hackney, abutting upon the northern side of Leagrave-road (Messrs. Lee & Easty).—Refused.

Lewisham.—That the Council, on the application of Mr. J. Murray, do extend the licence, dated January 21, 1908, in respect of the temporary wood and iron building on land between Nos. 54 and 56, Loampit-hill, Lewisham, for a period of three years.—Consent.

Lewisham.†—The erection of an iron and glass verandah at No. 33, Lewisham High-street, to abut upon the southern side of St. Stephen's-road (Messrs. Chiesman Brothers).—Refused.

Marylebone, East.†—The erection of an iron and glass shelter at the entrance to the Baker-street Tube Railway Station, Upper Baker-street, St. Marylebone (Mr. W. E. Mandelick for the London Electric Railway Company).—Refused.

Marylebone, West.†—The erection of an iron and glass shelter at the entrance to the Edgware-road Tube Railway Station, Edgware-road, St. Marylebone (Mr. W. E. Mandelick for the London Electric Railway Company).

Paddington, South.—The erection of (*a*) a lavatory addition, and (*b*) an addition over the existing porch, at No. 32, Gloucester-terrace, Paddington (Mr. W. H. White for Mr. P. S. Whaley).—Consent.

Strand.†—The erection of an iron and glass shelter over the entrance to the Strand Tube Railway Station, Strand (Mr. W. E. Mandelick for the London Electric Railway Company).—Refused.

Width of Way, Lines of Frontage, and Construction.

Islington, South.†—The erection of an iron and glass roof over the sunk forecourt of No. 47, Colebrooke-row, Islington (Mr. E. Marshall).—Refused.

Kensington, South.—A deviation from the plans approved for the erection of an addition over the motor garage at Nos. 39 and 41, Queen's-gate-place-mews, Kensington, the erection of an external iron staircase and balconies, and the erection of a boundary fence at less than the prescribed distance from the centre of the roadway of Queen's-gate-place-mews, so far as relates to the alterations shown on the plan, dated January 10, 1911 (Messrs. Hayward Brothers & Eckstein, Ltd.).—Consent.

Paddington, South.—That the Council, on the application of Messrs. Ellerton & Son, do extend the licence, dated December 1, 1908, in respect of the temporary wood and iron shed in front of No. 2, St. Petersburg-mews, Paddington.—Consent.

St. Pancras West.—The erection of an external iron staircase at premises on the eastern side of Diana-place, Euston-road, St. Pancras (Mr. W. J. Ebbetts for Messrs. G. Rowney & Co.).—Consent.

Space at Rear.

St. Pancras West.—A modification of the provisions of that section with regard to open spaces about buildings, so far as relates to the proposed erection of the St. Pancras Reform Club, No. 15, Victoria-road, Kentish Town, with irregular open spaces about such premises (Mr. W. Wadman for the trustees of the St. Pancras Reform Club).—Consent.

Whitechapel.—A modification of the provisions of that section with regard to open spaces about buildings, so far as relates to alterations at No. 13, Vallance-road, Mile End (Mr. A. L. Cranstone for Mr. M. Cohen).—Consent.

Working-Class Dwellings.

Hackney, North.—A further deviation from the plan sanctioned on June 18, 1901, for the erection of three blocks of working-class dwellings upon a site on the western side of Stoke Newington High-street, at the corner of Victoria-road, so far as relates to the alterations shown on the plan (Messrs. Joseph & Smithem).—Consent.

Deviations from Certified Plans.

Hammersmith.—A deviation from the plans approved in respect of Nos. 7 and 9, The Broadway, Hammersmith, so far as relates to the erection of an addition at the rear of the "Clarendon Restaurant."—Consent.

Height of Buildings.

Strand.—Erection of a building on the eastern side of Kingsway, to be known as the London Opera House, to abut also upon Sardinia-street and Portugal-street, and to exceed in height the width of Portugal-street (Mr. B. Crewe).—Consent.

Buildings for the Supply of Electricity.

Newington, West.—The erection of a water-cooling tower over the existing boiler-house at

the Southwark Bor
supply station, Penr
D. M. Kinghorn f
politan Borough Cou

Constructi

Westminster.—The
No. 76, Grosvenor-
borough-place, West
as shown on the plan
Selincourt & Sons).—

Uniting

Fulham.—The un
737-9, Fulham-road,
brook for the Londo
Company, Ltd.).—Re

St. George, Hanov
No. 23A, New Bond
duit-street, St. Geo
W. H. White for M

Stepney.—The for
the ground-floor lev
385, Commercial-roa
Davies for Messrs. I

Alteration and

City of London.—
concrete lift enclos
City, and to the un
with No. 38, Thr
Blomfield for the I
minster Bank, Ltd.).

Cubical Extent a

Kensington, Sout
addition to Harro
northern side of Ha
250,000 cubic ft. in
wall openings exceed
C. W. Stephens for
Refused.

The recommendati
to the views of t
councils concerned.

PROJECTED
IN THE

ABERAVON.—Munic
Mr. J. Roderick, Su

Aberdeen.—Extens
G. Gordon & Co. (
Walker, architects, 1

Arbroath.—Infirma
architect, 42, Hill-st

Barrhead. —Ext
(3,000*l.*); Mr. W.
West Regent-street,

Batley. — Extens
(2,000*l.*); Messrs. S
tects, Batley.

Beanby, N.B.—Re
Parish Church; M
tect, 39, Union-stree

Bonar Bridge.—M
Mr. S. McDonald
Thurso.

Bridgeton (Glasg
G. M. Hay & Co.'s
Arthur-street (10,00
staff.

Brighouse.—Victo
(2,000*l.*); Messrs. W
Museum-chambers, I

Broadheath (Ch
hall adjoining chu
Church, Broadheath

Brockenhurst (H
road; Mr. D. T. Co
Committee, Hants C

Bromborough (C
(1,700*l.*); Mr. J.
borough Urban Dist

Bury.—Twelve ho
Ltd., builders, Woo

Cardiff. — Launc
(2,800*l.*); Mr. E.
Cardiff Board of Gu

Colchester.—Exter
C. E. White, Cle
Guardians.

Corstorphine (nea
halls (6,500*l.*); Mr.
street, Glasgow.

Cowie, N.B.—Pro
Coal Company.

Crayford. — Addi
Slade Green School

Creaton (Northa
sanatorium; Mr. J
Lorne-road, Northa

Crowborough (S
school; Governors o

Dartford.—School
offices, Maypole D
F. W. Crook, Secret
mittee, Caxton Hou

* See also our list of
on another page.

the Southwark Borough Council's electricity supply station, Penrose-street, Southwark (Mr. D. M. Kinghorn for the Southwark Metropolitan Borough Council).—Consent.

Construction of Buildings.

Westminster.—The erection of additions to No. 76, Grosvenor-road and No. 80, Bessborough-place, Westminster, with the footings as shown on the plans (Mr. A. Burr for Messrs. Selincourt & Sons).—Consent.

Uniting of Buildings.

Fulham.—The uniting of Nos. 733-5 and 737-9, Fulham-road, Fulham (Mr. H. J. Colebrook for the London Real Estate Investment Company, Ltd.).—Refused.

St. George, Hanover-square.—The uniting of No. 23A, New Bond-street, and No. 33, Conduit-street, St. George, Hanover-square (Mr. W. H. White for Madame Nilsson).—Consent.

Stepney.—The formation of an opening at the ground-floor level between Nos. 383 and 385, Commercial-road East, Stepney (Mr. J. H. Davies for Messrs. Levy Brothers).—Consent.

Alteration and Uniting of Buildings.

City of London.—The erection of a steel and concrete lift enclosure at No. 41, Lothbury, City, and to the uniting of No. 41, Lothbury with No. 38, Throgmorton-street (Mr. A. Blomfield for the London County and Westminster Bank, Ltd.).—Consent.

Cubical Extent and Uniting of Building.

Kensington, South.—The erection of an addition to Harrod's Stores, Ltd., on the northern side of Hans-road, Chelsea, exceeding 250,000 cubic ft. in extent and with division wall openings exceeding the size specified (Mr. C. W. Stephens for Harrod's Stores, Ltd.).—Refused.

The recommendations marked † are contrary to the views of the metropolitan borough councils concerned.

PROJECTED NEW BUILDINGS IN THE PROVINCES.*

ABERAVON.—Municipal offices, etc. (12,300*l.*); Mr. J. Roderick, Surveyor, Town Council.

Aberdeen.—Extensions, works, for Messrs. G. Gordon & Co. (2,500*l.*); Messrs. Wilson & Walker, architects, 181, Union-street, Aberdeen.

Arbroath.—Infirmary (6,000*l.*); Mr. H. Gavin, architect, 42, Hill-street, Arbroath.

Barrhead. —Extensions, public school (3,000*l.*); Mr. W. R. Rowan, architect, 237, West Regent-street, Glasgow.

Batley. — Extensions, Mile End School (2,000*l.*); Messrs. Sheard & Hanstock, architects, Batley.

Beanby, N.B.—Reconstruction of Kilmorark Parish Church; Mr. John Robertson, architect, 39, Union-street, Inverness

Bonar Bridge.—Manse buildings (1,400*l.*); Mr. S. McDonald, architect, Olrig-street, Thurso.

Bridgeton (Glasgow).—Extensions, Messrs. G. M. Hay & Co.'s Strathclyde Iron Foundry, Arthur-street (10,000*l.*); plans by firm's own staff.

Brighouse.—Victoria Mills, Bailiff Bridge (2,000*l.*); Messrs. Walsh & Nicholas, architects, Museum-chambers, Halifax.

Broadheath (Cheshire).—Proposed parish hall adjoining church; Vicar, St. Alban's Church, Broadheath.

Brockenhurst (Hants).—School, Partridge-road; Mr. D. T. Cowan, Secretary, Education Committee, Hants County Council, Winchester.

Bromborough (Cheshire).—Council offices (1,700*l.*); Mr. J. Clarke, Surveyor, Bromborough Urban District Council.

Bury.—Twelve houses; Messrs. Jas. Byrom, Ltd., builders, Woolfold, Bury.

Cardiff. — Laundry at Ely Workhouse (2,800*l.*); Mr. E. Stewart, care of Clerk, Cardiff Board of Guardians.

Colchester.—Extensions, infirmary; Mr. C. E. White, Clerk, Colchester Board of Guardians.

Corstorphine (near Edinburgh).—Church and halls (6,500*l.*); Mr. McG. Chalmers, 95, Bath-street, Glasgow.

Cowie, N.B.—Proposed houses for the Ailoa Coal Company.

Crayford. — Additional accommodation at Slade Green School; the Managers.

Creaton (Northampton). — Extensions to sanatorium; Mr. J. T. Powell, builder, 11, Lorne-road, Northampton.

Crowborough (Sussex). — Enlargement of school; Governors of Sir H. Fermer's Charity.

Dartford.—School and central hall and offices, Maypole District (700 places); Mr. F. W. Crook, Secretary, Kent Education Committee, Caxton House, Westminster, S.W.

Denton.—Alterations to works, Bond-street, for Messrs. T. E. Whitworth & Co., Ltd.

Devizes.—Reconstruction of houses and shops, corner of Market-place and St. John-street, for the London City and Midland Bank, Ltd.

Dundee.—Church (8,000*l.*), for St. John's Congregation, Dundee.

East Cowes.—School (300 places); Mr. F. C. Flux, Secretary, Education Committee, Isle of Wight County Council, Newport.

Elton.—Proposed rebuilding of Oddfellows' Arms, Tottington-road (1,500*l.*), for the Bury Brewery Company, Ltd.

Foleshill (Coventry).—The following plans have been passed:—Six houses and two shops, Main-road, Longford, for Mr. A. Hanson; eight houses and shop, Collycroft, Bedworth, for Mr. W. Lee.

Giffnock.—School (6,700*l.*); Eastwood School Board.

Glasgow.—Church for Moore Park United Free Congregation (3,000*l.*); Mr. Balfour Abercrombie, 131, West Regent-street, Glasgow. St. Margaret's Episcopal Church, Newlands (4,000*l.*); Mr. McG. Chalmers, 95, Bath-street, Glasgow. Extensions, Messrs. Brown & Stewart's paper mills (2,500*l.*); Messrs. J. McKissack & Sons, 68, West Regent-street, Glasgow.

Gorleston (Great Yarmouth).—Institution for blind and deaf children (8,950*l.*); Mr. F. Grimble, builder, 219, Northgates-street, Yarmouth.

Grangemouth.—Offices for Messrs. Davis Traill & Sons.

Greenock.—Extensions, Royal Naval Torpedo Factory, Battery Park (25,000*l.*); Messrs. Jas. Goldie & Son, builders, 52, St. Enoch-square, Glasgow.

Guildford.—Alterations to Borough Halls (2,000*l.*); Architect, care of Mr. R. Salsbury, J.P., Chairman of the Company.

Hereford.—Extensions to library (3,460*l.*); Messrs. E. W. Wilks & Son, builders, Whitecross-street, Hereford.

Hoole.—Additions to Hoole Church (1,740*l.*); Messrs. J. Mayers & Son, builders, Canal Side, Chester.

Hull.—Offices for Messrs. Moore & Robson (2,500*l.*); Messrs. Harbron & Robson, Spring Bank, Hull. Ice factory (2,000*l.*); Messrs. Freeman, Sons, & Gaskell, architects, Carr-lane, Hull.

Keighley. — Villas (2,100*l.*); Messrs. J. Haggas & Son, Keighley.

Kinning Park (Glasgow).—Buildings for Messrs. McKinley, Ltd., metal refiners.

Landport (Portsmouth).—Bank, corner of Commercial-road and Surrey-street, for the London City and Midland Bank.

Latchford (Warrington).—Proposed church (5,000*l.*); Vicar, St. Hilda's, Latchford.

Leeds.—Warehouse and offices at New Mills, Beeston, for Messrs. John Hartley & Sons, Ltd.

Linlithgow.—Additions, Nobel Explosives Company's factory (1,500*l.*); Mr. W. Scott, architect, 12, High-street, Linlithgow.

Llanelly.—Fifteen houses; Mr. Geo. Watkeys, Surveyor, Llanelly Urban District Council.

Lowestoft.—A plan lodged by Mr. E. W. Graveling for four houses, Walmer-road, has been passed.

Manchester.—Proposed theatre: Mr. R. Flanagan, Queen's Theatre, Manchester.

Margate.—Concert hall, arena, and colonnade at the fort (16,449*l.*); Mr. T. T. Denne, builder, Upper Walmer, Deal.

Marple (Cheshire). — Additions, premises, Market-street, for Messrs. H. Gould & Co. Additions, premises, Church-lane, for Messrs.. N. & H. Taylor.

Milton (Staffs).—School; Mr. G. Balfour, Secretary, Education Committee, Staffs County Council, Stafford.

Motherwell, N.B.—Extensions, Messrs. Ports, Cassels, & Williamson, sugar machinery works; plans by firm's own staff.

North Berwick.—Proposed convalescent home (2,500*l.*); Surveyor, North Berwick Town Council.

Oxford.—County Offices, New-road (7,300*l.*); Messrs. Wooldridge & Simpson, builders, Oxford.

Partick.—Church hall and offices, Belshayray Parish Church, Crow-road (2,000*l.*); Messrs. Stewart & Paterson, architects, 14, Blythswood-square, Glasgow.

Rawtenstall.—Cinematograph hall; Messrs. H. Booth & Sons, 42, Regent-street, Haslingden.

Redford.—Men's quarters in cavalry section of barracks; Mr. Colin Macandrew, builder, Edinburgh.

Richmond-on-Thames.—Extension to Town Hall; Mr. J. H. Brierley, Surveyor, Richmond-on-Thames Town Council.

Rochdale.—Extensions, Art Gallery (6,000*l.*); Mr. S. S. Platt, Surveyor, Town Council.

Home for nurses (4,000*l.*); Mr. R. A. Leach, Clerk, Rochdale Board of Guardians.

Sharpness.—Offices, workshops, etc., for the Channel Company.

Silverdale (Lancs).—Detached villa (1,200*l.*); Messrs. Clement Williams & Sons, architects, Halifax.

Smeaton Village.—School (3,000*l.*); Mr. A. M. Hardie, architect, 20, George-street, Edinburgh.

South Bank.—Town hall; Mr. C. W. Cockersoll, Surveyor, South Bank Urban District Council.

South Shore (Blackpool).—Sunday school, Dean-street; Vicar, South Shore Parish Church.

Starcross (Devon).—Reservoir; Mr. E. H. Quick, engineer, Bedford-circus, Exeter.

Stoke-on-Trent.—Alterations and adaptation at old administrative block (1,330*l.*); Messrs. Ball & Robinson, builders, Boothen-road, Stoke-on-Trent.

Tantobie (Co. Durham).—Warehouse and stables (3,000*l.*); Mr. L. G. Ekins, architect, West Blandford-street, Newcastle.

Todmorden.—Billiard-hall (2,000*l.*); Mr. H. Booth, architect, 42, Regent-street, Haslingden.

Uttoxeter.—Extensions, foundry, etc., Pinfold-street, for Messrs. Bamford & Son.

Warrington.—School, King Edward-street (7,000*l.*); Mr. T. Longden, Town Hall, Warrington.

Worthing.—Out-patients' department at hospital (3,000*l.*); the Governors.

Yarmouth.—Art School (3,500*l.*); Secretary, Education Committee, Yarmouth Town Council. The following plans have been passed:—Alterations to Sea View Hotel, Marine Parade, for Mr. G. Barron; three cottages, Albemarle-road, Gorleston, for Mr. Downing; additions, the factory, for Messrs. Grout & Co.; three houses, West Cliff Garden Suburb, Gorleston, for Mr. Gould; hall, Marine Parade, for the Yarmouth and Gorleston Investment Company.

York.—School, South Bank (800 places); Mr. J. H. Mason, Secretary, Education Committee, Town Council.

CAPITAL AND LABOUR.

NOTTINGHAM BUILDING TRADE DISPUTE.

The dispute in connexion with the building trade of Nottingham, involving close upon 1,000 men, has been settled by conciliation. Some six months ago the members of the local branches of the Amalgamated Society of Carpenters and Joiners and the General Union of Carpenters and Joiners handed in their notices with the object of securing an advance of one penny per hour in wages and also of obtaining certain alterations in the working rules, the present standard rate of wages being 9d. per hour. Some of the points have had to be referred to the Midland Centre of the National Building Trades Conciliation Board, and the men are to have an advance of one-halfpenny per hour in wages; but, on the other hand, an alteration is to be made in the rule relating to the present walking-time, while an hour's notice is to be given in respect to discharges.

STATE OF EMPLOYMENT IN THE BUILDING TRADES.

Employment in January, says the *Board of Trade Labour Gazette*, continued slack, and showed little general change as compared with a month ago. It was rather better than a year ago. The percentage of trade union carpenters and joiners unemployed at the end of January was 9·5 as compared with 10·7 a month ago and 14·4 a year ago; and for plumbers at the same dates the percentages were 11·2, 11·3, and 11·7. There was a considerable decrease in the percentage unemployed as compared with both a month ago and a year ago, in the case of carpenters and plumbers in the northern counties and of carpenters in Scotland, where many of the trade union members are engaged in shipbuilding. Returns from trade unions of bricklayers and masons showed little general change compared with a month ago. Painters reported some improvement, while returns from plasterers showed a decline. Compared with a year ago there was a slight general improvement. For London the trade union returns showed that 8·0 per cent of carpenters and joiners were unemployed at the end of January, the same percentage as a month ago, compared with 13·2 per cent. at the end of January, 1910. The corresponding percentages for plumbers were 12·5, 9·5, and 13·9 respectively. Employment with masons in London was reported as fair. Returns received from 1,205 firms employing 57,348 workpeople at the end of January showed that as compared with a month ago there was an increase in the total number employed by them of 3·7 per cent. in London, and of 0·9 per cent. in other districts.

*See also our list of Competitions, Contracts, etc., on another page.

WESTMINSTER CITY COUNCIL.

AT the fortnightly sitting of the Westminster City Council on Thursday, the 16th inst., the following maters were dealt with:—

Paving Contracts. — An offer from the Improved Wood Pavement Company, Ltd., for a scheme of twenty years' maintenance of the wood-paved carriageways of certain streets in the City. Having fully considered the offer, and the reports of the City Engineer, the Highways Committee considered that the Council should not depart from the principle of standing Order 88, which provides that where contracts for the maintenance of carriageway pavements have expired, the Council shall themselves maintain the roadway.—After some discussion this was agreed to.

The Mall Extension.—An emergency report was submitted by the Improvements Committee recommending that the Council should put into operation Michael Angelo Taylor's Act for the purpose of the Mall improvement.

Mr. Coleman (Chairman of the Committee) explained that the London County Council has suggested that the City Council should put the Act in force.—The recommendation was agreed to.

LONDON COUNCILS.

Acton.—The Goldsmiths' Company have informed the Council that with regard to the laying-out of the Goldsmiths' Estate at East Acton, that the company have instructed their surveyor to meet the Surveyor of the Council as often as may be necessary for the purpose of exchanging views and coming to an agreement with reference to all matters in relation to the laying-out of the estate.

Barnes.—The Surveyor has been instructed to prepare plans for making-up Deanhill-road. Plans have been passed for Mr. O. Horn for six shops in Coval-road, and for Mr. A. Harvey for the conversion of three houses into shops in Barnes High-street.

Battersea.—Messrs. G. Baines & Son have had plans passed for the erection of Baptist schools upon a site abutting upon York-road, Verona-street, and Benfield-street.

Bermondsey.—The Electricity Committee has decided in favour of tenders being invited for extensions to the generating plant. The estimated cost of these extensions, together with the necessary additions to the boiler-house, is put at 20,100*l*. Before tenders are accepted, however, the question of a bulk supply will be considered.

Chelsea.—Mr. E. C. P. Monson, on behalf of the Trustees of the Sutton Estate, has lodged plans for the erection of model dwellings upon a site bounded by Cale-street, College-street, Marlboro'-street, and Leader-street. The scheme provides for 683 self-contained tenements, comprising 1,468 rooms, together with fifty-three lock-up shops with basements.

Croydon.—The Rural District Council has approved a plan submitted by the Sanitary Surveyor for making-up part of Robinson-road, Mitcham. The estimated cost is 160*l*.

Finchley.—The following plans have been passed:—Mr. T. Richards, eight houses, Fairlawn-avenue; Mr. A. Evans, six houses, Woodhouse-road, also two houses, Finchley-avenue; Messrs. E. Evans & Sons, twelve houses, Windermere-avenue; Mr. R. Ellwood, four houses, Holmwood-gardens; Mr. C. F. Day, four shops, with dwellings over, Great North-road; Mr. P. D. Walker, twenty-eight houses, Woodlands-avenue. Plans have been lodged by Messrs. Lavington Bros. for five houses, Fenstanton-avenue.

Greenwich.—An overground urinal is to be erected at the foot of Blackheath-hill. The cost is put at 170*l*.

Hackney.—It is proposed to extend the generating plant at an estimated cost of 4,300*l*. The Works Committee have decided in favour of the construction of an underground convenience in Kingsland-road, at an approximate cost of 700*l*.

Hendon.—The Rural District Council has passed the following plans:—Mr. D. Jones, four houses, Moss-lane; Mr. W. J. Evershed, seven houses, Locket-road, Harrow Weald; Messrs. E. A. Roome & Co., alterations to Summerfield, Barnet-lane, Elstree.

Ilford.—The following plans have been passed:—Mr. F. W. Hitchcock, five houses and motor shed, Aldborough-road; Mr. G. B. Durston, six houses, Cowley-road; Mr. W. A. Pite, mortuary to hospital, Dr. Barnardo's Homes, Barkingside; Messrs. Higgens & Thomerson, on behalf of Mr. W. H. Knox, thirteen houses, South Park-drive.

Islington. — Mr. H. L. Lamb, Second Engineering Assistant, has been appointed Assistant District Engineer of the Gold Coast Colony. Mr. G. A. Barfoot, Engineering Assistant, is to be promoted to fill Mr. Lamb's place.

Richmond-on-Thames.—By eighteen votes to twelve, the Council has decided that additional office accommodation at the Town Hall is necessary, and that the extension of the building must be taken in hand without delay.

St. Pancras.—The Borough Council is to accept an offer from the L.C.C. to contribute 3,000*l*. towards the cost of paving works in Euston-road, between Mabledon-place and Tonbridge-street. Provision will be made in the next estimates for the repaving of Upper Woburn-place.

Southwark.—The work of constructing the new arm to the subway at the Elephant and Castle, from the "Rockingham" public-house to the corner of New Kent-road and Walworth-road, is to be proceeded with, a contract having been entered into with Messrs. Perry & Co. (Bow), Ltd., at 1,249*l*. 15s. 5d., to carry out the work. The Council have passed a plan for the erection of a new front to the Surrey Theatre, Blackfriars-road. The builders are Messrs. Kirk & Kirk, of Esher-street, Westminster. The Special Committee in charge of the matter has generally approved the London County Council's improvements scheme for what is known as the Tabard-street area.

Stepney.—Sewers are to be reconstructed in Rectory-square at an estimated cost of 500*l*. An electricity sub-station is to be provided on an island site adjoining Old Gravel-lane and Wapping Dock-street. It is intimated that Mr. Chas. Dunch, architect, St. Clement's Ho, Clement's-lane, Lombard-street, E.C., has prepared plans for an extension of the Stepney Sanitary Laundry.

Tottenham. — Plans submitted by the Engineer have been approved for making-up Station-crescent at the junction of Clarence-street. White Hart-mews is also to be made up with 6 in. of concrete and 1½ in. of asphalt, at an estimated cost of 1[illegible]. The carriage and foot ways in Philip-lane and West Green-road are to be made up and paved, and the Middlesex County Council are to be asked to contribute towards the cost. Plans have been passed as follows:—Messrs. Hood Bros., additions, etc., at mission hall, the Crescent; Mr. A. Wantzen, factory, Fawley-road. Mr. H. S. Couchman has, on behalf of Mr. R. R. Booth, lodged plans for three streets, with sewers, and general development of the West Green Nursery Estate, Philip-lane and West Green-road.

Wandsworth. — The Highways Committee have decided in favour of an underground convenience being constructed in Blackshaw-road, near its junction with Tooting High-street, at an estimated cost of 750*l*. Paving works are to be carried out in Upper Richmond-road, Putney, and in Church-lane, Tooting, at an approximate cost of 335*l*. and 545*l*. respectively Tenders are to be invited for paving part of Ellison-road, Streatham, and part of Fernside-road, Balham, as new streets. Messrs. J. Mowlem & Co. are to pave the way at the rear of houses in Blackshaw-road and Foss-road, and entrances thereto, at a cost of 422*l*.; also part of Ribblesdale-road, Streatham, with Victoria indurated paving at 1,523*l*. The tender of Messrs. E. Parry & Co. has been accepted for paving with Aberdeen adamnant St. Simon's-avenue, Putney, at a cost of 847*l*.; also part of Magdalen-road, Springfield, with the same paving at 3,316*l*. The following plans have been passed:—Mr. W. E. Blake, alterations and additions to Roehampton-ho, Roehampton-lane, Putney; Messrs. W. F. Blay, Ltd., additions to Gordon Dene, Prince's-road, Southfield; Messrs. L. & W. Whitehead, Ltd., cinematograph theatre, 169-171, Upper Richmond-road, Putney; Messrs. Higgs & Hill, Ltd., additions to Clive House, Clarence-lane, Roehampton; Mr. H. R. Thorpe, three houses, Ribblesdale-road, Streatham; Messrs. J. Burgess & Sons, additions to 110, Mitcham-road, Tooting; Messrs. G. Trollope & Sons and Messrs. Colls & Sons, Ltd., alterations and additions to Edgecombe Hall, Beaumont-road, Southfield; Mr. W. Bartholomew, additions to Langholm Laundry, Point Pleasant, Southfield; Messrs. W. & C. Brown, erection of a factory, Ravensbury-terrace, Southfield.

Watford.—The Rural District Council have passed plans for four villas in Park-road, Radlett, for Messrs. Wiggs & Sons.

West Ham.—The following plans have been passed:—Mr. J. M. H. Gladwell, alterations, "Dew-Drop" public-house, Chandos-road and Brydges-road, Stratford; Messrs. W. Bradford & Son, alteration, "Beckton Arms" public-house, corner of Peter-street and Beckton-road, Canning Town; Mr. W. H. Allerton, forty-four houses, Woodside-road, Prince Regent's-lane, Plaistow.

Westminster.—Streets of the total area of 30,665 sq. yds. in macadam, 11,835 sq. yds. in wood, 3,555 sq. yds. in granite, and 2,100 sq. yds. in asphalt setts are to be paved or repaved during the ensuing financial year at a total estimated cost of 29,807*l*. Paving works are to be carried out in Caledonia-street and Grosvenor-road, at an estimated cost of 370*l*. Messrs. Burton Bros., 45, Chester-terrace, S.W., are to reconstruct the second-class swimming-bath at Marshall-street, at 214*l*. Messrs. Cope & Furneaux have had plans passed for an addition to 60, Buckingham-gate, to abut upon Brewer's Green-mews.

Woolwich. — Electricity mains are to be extended at an estimated cost of 410*l*. Plans lodged by Mr. J. O. Cook, architect, 14, Eleanor-road, Woolwich, S.E., for offices at the North Kent Brewery, Lakedale-road, Plumstead, have been passed.

COURT OF COMMON COUNCIL.

A MEETING of the Court of Common Council was held at the Guildhall on Thursday last week. The Lord Mayor presided.

Street Widenings.—The Improvements and Finance Committee submitted the verdict of the jury (amount 500*l*., including the claimant's costs) in respect of the claim of Mr. H. W. Reeves, for his under-leasehold interest in the premises No. 135, Bishopsgate-street Without—(amount of claim, 1,270*l*.); the verdict of the jury (amount 500*l*., including the claimant's costs) in respect of the claim of Mr. E. A. Graham for his sub-leasehold and trade interests in the premises No. 135, Bishopsgate-street Without—(amount of claim, 2,435*l*.). The Committee also submitted for adoption an arrangement for acquiring the leasehold interest of the Right Hon. Baron Burnham in the premises No. 78, Fleet-street, for the sum of 5,575*l*.—(amount of claim, 7,252*l*.).—The Court approved.

Proposed Rebuilding of Gresham College.—Mr. Deputy Coates brought up a scheme from the Gresham Committee for the rebuilding of the college. The Committee propose to acquire the site adjoining at a cost of 20,800*l*., and to erect a larger building at a cost of between 12,000*l*. and 15,000*l*. Rough plans had been prepared, showing that the new premises would have seating accommodation for an audience of from 420 to 500. After some discussion the Committee's report was approved.

OBITUARY.

Mr. Alfred Robert Pite.

We regret to announce the decease of Mr. Alfred Robert Pite, who was articled in the forties to the late William Gilbee Habershon, of St. Neots; in 1851 he entered the office of Philip Hardwick, among whose pupils and assistants then were C. L. Eastlake, A. W. Blomfield, F. P. Cockerell, S. J. Nicholl, T. Rogers Smith, and C. F. Hayward. In 1856 he went to Brazil as architect to the Dom Pedro Railway, where he was associated with the late Mr. Mansergh, F.R.S., who was one of the engineers. In 1860 he entered into partnership with his former master, W. G. Habershon, and, until the dissolution of this partnership in 1878, enjoyed a very extensive and varied practice in churches, chapels, and domestic buildings, among which the Churches of St. Paul and St. Stephen, Hounslow, St. Stephen, Walthamstow, and Christchurch, Chislehurst, may be mentioned. Mr. Pite acted subsequently as architect to the Y.M.C.A., for whom he adapted Exeter Hall, and practised in London until he retired to Ramsgate a few years ago, where he died on the 15th inst. in his seventy-ninth year.

Mr. Wake.

The death, on February 17, is announced of Mr. Henry Hay Wake, M.Inst.C.E., aged sixty-six years. Mr. Wake, a native of Sunderland, was a pupil of Mr. Thomas Meik, Engineer to the River Wear Commissioners, and having been appointed, in 1868, Engineer-in-Charge, effected extensive improvements of the harbour and docks at Sunderland, with maritime defence works, which he supplimented with the designing and construction of the two piers, whereof the northern and longer pier was completed seven years ago. Mr. Wake, with Mr. P. W. Meik, made designs for the piers of Seaham Harbour. He was elected an Associate of the Institution of Civil Engineers in 1870, and became a Member in 1874.

Mr. J. I. Pickard.

Mr. John Iredale Pickard, who died suddenly in Leeds on Tuesday, was a builder, who carried on an old-established business in the city, and was held in the highest esteem by his friends and colleagues in the building trade. He had taken an assiduous and active part in the promotion and welfare of the Leeds

Master Builders' Association, and his counsel and experience in respect of building work and the various matters incidental to it were highly valued and much appreciated. He was always anxious to maintain the most friendly relations with the operatives, and was a member of the Local Conciliation Board to consider and deal with any matter of dispute which might arise. Mr. Pickard was sixty-seven years of age, and leaves a widow and a son.—*Yorkshire Post.*

FOREIGN AND COLONIAL.

Water Supply, Baku.

Messrs. Griffiths & Co., who are also engaged in carrying out extensive railway works in Chili, have secured the contract, in open competition with many foreign firms, for the water supply of Baku; the contract amounts to 1,260,000*l.*, and the operations will occupy nearly three years.

Hotel, Calgary, Canada.

H.M. Trade Commissioner for Canada (Mr. R. Grigg) reports that work is to be begun early in April on the construction of a new hotel in Calgary at a cost of 1,500,000 dollars (about 308,000*l.*). The name and address of the architect may be obtained by British firms on application to the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, London, E.C.

Railway Station, Alexandria.

A supplement to the Egyptian *Journal Officiel* of February 1 contains a decree declaring of public utility the erection of a new railway station in Alexandria, in accordance with the plans already prepared, and authorising the Ministry of Public Works to carry out the decree.

Labour in the Colonies.

From the "Supplement to Circulars of the Emigrants' Information Office," 31, Broadway, Westminster, S.W., we take the following information:—"It is too early in the year for emigrants without means or a guarantee of employment to go to Canada.—In Sydney and suburbs trade is reported as being 'good' to 'very good.' The building trades have been very brisk, though there has been no apparent shortage of labour. The iron, furniture, and timber trades, wharf labourers, navvies, electrical workers, and many others have all been very busy.—In *South Australia* the building trades continue very busy; carpenters, masons, bricklayers, painters, and plasterers are all fully employed, and carpenters and masons are wanted for the country; in the engineering trades boilermakers and blacksmiths (but not fitters or moulders) are fully employed.—In *Western Australia* there is a good demand for general labourers in the large timber industries round Blackwood and Busselton, and for mechanics in the building trades.—The supply of labour in *Cape Province* is ample everywhere, except that there have been a few vacancies for plumbers. There is an over-supply of men in the building trades at Cradock and King William's Town.—Persons thinking of accepting offers of employment in Chili are advised to apply to the Emigrants' Information Office, 31, Broadway, Westminster, S.W., for further information.

South Africa.

The Union of South Africa Dominion invite competitive designs for new postage stamps; in the case of each of the eleven separate sets they offer a premium of 10*l.* Designs should be sent to the Postmaster-General in Cape-town not later than March 31, and each design must include the King's head and crown, with the figure of value.

TRADE CATALOGUES.

Messrs. J. Sagar & Co., Ltd., saw mill engineers, of Canal Works, Halifax, forward us a booklet dealing with their patent combined chain-cutter and hollow-chisel mortising and boring machine (M1). The outstanding feature of this machine is that, by improved adjustments, chain-cutters of the same width are interchangeable on 1½-in. and 2¼-in. guide-bars, thus practically doubling the range in sizes of mortises with the same chain-cutter. For very small mortises the use of the chain-cutter is undesirable, inasmuch as the links forming the chain-cutter are necessarily smaller, and consequently lacking the strength of the larger size. For these the hollow-chisel apparatus can be brought into use. The machine can also be made without the hollow-chisel apparatus.

We have received from Sir William Burnett & Co., Ltd., of Nelson Wharf, Millwall, London, E., leaflets descriptive of the "Burnettizine" timber preservative, which the firm claim to be an absolute preventive of dry-rot in timber. Owing to its highly inflammable nature and permeating odour, the use of creosoted timber is necessarily restricted. Burnettized timber is said to be odourless, uninflammable, and clean. "Burnettizine" is applied to timber in a similar manner to creosote. Timber thus rendered dry-rot proof is used by the majority of the London underground railways, by many steamship companies (particularly for refrigerating installations), in the Manchester Infirmary, where the timber of the refrigerating installations had previously been afflicted with bad dry-rot, and by the principal railways of the kingdom. The process is carried out in London by Sir William Burnett & Co., Ltd., at their works, Nelson Wharf, and by their agents, Messrs. James P. Corry & Co., Ltd., of Belfast, and Messrs. Hall Bros., Ltd., of South Shields.

Mr. John Grundy, of Manchester and 393A, City-road, London, E.C., heating specialist, sends us a booklet of testimonials in praise of the Grundy system of heating and warming buildings. This system has been in use for many years, and is sufficiently well known to need no comment from us. The principle, that of warming the fresh air introduced from outside, regarded from the hygienic, which is ultimately the only practical, point of view, is beyond cavil.

The Wilson Engineering Company, Ltd., of 259, High Holborn, London, W.C., send us an illustrated price-list of their culinary and heating specialities. This firm are the patentees and sole manufacturers of the "Wilson" patent portable cooki ranges. These ranges require no building in, and can consequently be set on any part of the floor, or in the centre of the kitchen. They can also be used in the open air, and may be adapted to burn wood, charcoal, peat, coke, or anthracite coal. They are extremely economical in price. The "Wilson" patent gas cooker is another product of this firm, who also manufacture independent boilers for heating conservatories, halls, public buildings, etc., portable coppers, incandescent burners for paraffin lamps, and wickless incandescent oil lamps of high candle-power.

We have received from Messrs. Jones & Attwood, Ltd., heating specialists, Stonebridge, a leaflet calling attention to some works which they have recently executed. Messrs. Jones & Attwood have successfully installed their heating apparatus on the low-pressure hot-water system at Belvoir Castle, the seat of his Grace the Duke of Rutland, where they have also executed the hot-water supply service. Hot-water supply is this firm's speciality. They have designed special boilers for this type of work, and have supplied installations for public buildings, hospitals, and swimming-baths, as well as for private residences. Messrs. Jones & Attwood are also the sole manufacturers of "Shew's Economic Heater," which obtained the Royal Agricultural Society's prize of 100*l.* in 1909 for the best hop-drying plant in Great Britain.

PATENTS.

APPLICATIONS PUBLISHED.*

2,226 of 1910.—Albert Rolf Braden: Method of and apparatus for producing soldered joints.

4,399 of 1910.—The "Kleine" Patent Fire-Resisting Flooring Syndicate, Ltd.: Brickwork floors.

5,712 of 1910.—Max Ulrich Schoop: Coating of surfaces with metal applicable also for soldering or uniting metals and other materials.

6,854 of 1910.—Josiah Griffiths: Means and method of supporting joists.

7,396 of 1910.—Charles Stewart and A. & J. Main & Co., Ltd.: Fixing steel pales to horizontal rails, cross-bars, and the like in fencing.

12,647 of 1910.—Ernest Richard Royston: Stone cutting.

13,788 of 1910.—John Edward Conzelman: Concrete floor and like construction.

17,646 of 1910.—Armand Gabriel Considère: Foundations or supports for buildings and other structures.

19,433 of 1910.—Hermann Walder: Wall-plug or socket for solid floors.

19,485 of 1910.—Paul Stolte: Reinforced walls.

21,748 of 1910.—William Johnston and William Hirons: Windows.

24,376 of 1910.—John Lloyd: Forms or centres for giving the proper shape or contour to the interior of sewers, arches, and other work.

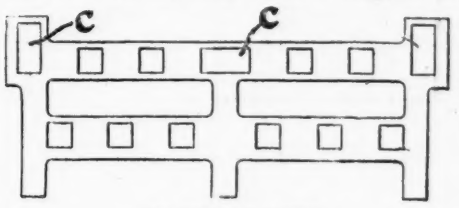
29,534 of 1910.—William Henry Tonks and Walter Sparks: Window and fanlight opening and closing mechanism.

*All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

SELECTED PATENTS.

No. 21,892 of 1909.—Frederick Alexander Macdonald and Charles Boudart: Reinforced concrete.

This relates to reinforced concrete in which the main bars of a beam or other reinforcement are square, and are spaced apart and rigidly connected by means of perforated plates having one or more rows of square holes. The holes are of a size to fit the various bars, the large holes *c* being at the

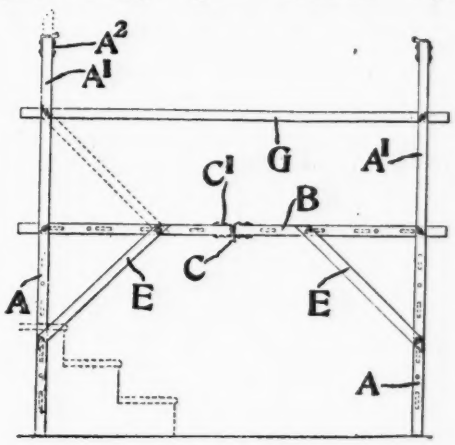


21,892 of 1909.

centre and sides. The bars are bent up diagonally at intervals, and the bent portions may be again bent horizontally over the supports, and may project beyond the end for tying adjacent structures together. U-shaped stirrups may be sprung over the bars.

23,083 of 1909.—Christian Petre Christensen: Ladders and scaffolding.

This relates to convertible ladders, scaffolding, and trestles, constructed of two ladders A having no rungs at one end A^1 and a ladder B in two sections hinged together. A detachable bolt C fitted with a wing-nut is passed through lugs on three-sided hinge-

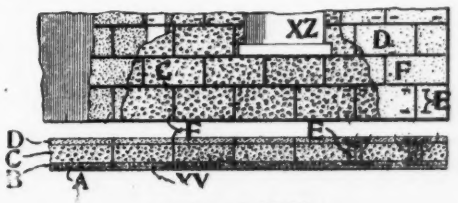


23,083 of 1909.

brackets C^1, A^2 on the ladders B, A and connects together the sections of the ladder B, or the sections of the ladder B with the ladders A. One or more guard-rails G and stays E are detachably connected to the respective parts by bolts and wing-nuts.

24,000 of 1909.—Charles William Chappelow: Concrete structures.

This relates to concrete structures of the type cast *in situ* without temporary centering by using blocks formed of parallel slabs connected by transverse bars, and between which the concrete filling is applied. A layer of cement B is first placed on the board or base A, to which any forms or cores XY, XZ, corresponding to openings in the finished structure, are also attached. Next, temporary division plates F and permanent anchors or stays E are inserted in the cement layer, and a temporary core C of loose sand is laid on, and then a final layer D of cement, which



24,000 of 1909.

embeds the anchors E, but is flush with the tops of the plates F. When the cement has set, the plates F are removed and the shells separated from each other and emptied of the sand. Bevels may be formed at the junctions of the shells by means of strips of wood attached to the plates F. Three or more parallel plates may be connected by stays in a similar manner, the space between the outer plates forming a heat-insulating air space in the finished wall, and curved shells for arches or chimneys may be formed on a curved board. The plates of the shells may be formed with separated stays, to be connected when in place.

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, — ; Contracts, iv. vi. viii. x.; Public Appointment, —; Auction Sales, xxiv.

Certain conditions beyond those given in the following information, are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

*** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.

Competitions.

FEBRUARY 28. — **Corbridge.** — The Hexham R.D.C. invite duly qualified civil engineers to submit schemes for sewage disposal. Information can be obtained from the Clerk to the Parochial Committee (Mr. E. Pearson, Corbridge).

MARCH 1.—**Peniston.**—LIBRARY.—Limited to architects within 30 miles of Peniston.

MARCH 15. — **San Salvador.** — SCHEME FOR A CITY THEATRE. — First premium, 8,000 francs; second, 4,000 francs. Particulars from Mr. M. J. Kelly, 8, Idol-lane, E.C.

MARCH 24. — **Swansea.** — CASTLE-STREET IMPROVEMENT.—The Swansea Corporation invite competitive designs and estimate for improvement of Castle-street. Two premiums are offered. See advertisement in issue of February 10 for further particulars

MARCH 31.—**Manchester.**—LIBRARY AND ART GALLERY. — The Manchester Corporation invite designs for Library and Art Gallery upon the Piccadilly site. See advertisement in issue of January 13, and article in issue of January 20, and "Competition News" in issue of February 3.

MARCH 31.—**New Cumnock.**—The Deacons' Court invite plans for the erection of a new church, etc. See "Competition News" in this issue.

MARCH 31. — **Romford.** — The Town Planning and Modern House and Cottage Exhibition invite designs for the general plan of Gidea Park, Squirrels Heath, Romford. For further particulars see advertisement in our issue of September 17, and of October 8.

MARCH 31.—**Trondhjem, Norway.**—PROPOSED HARBOUR AND RAILWAY EXTENSION.—Competitive designs for above are invited by the Joint Committee of the State Railways and the City Harbour Commissioners. See our issue of November 5, page 563, and that of October 15, page 444, for further information.

APRIL 1.—**Coventry.**—MUNICIPAL OFFICES.—The Coventry Corporation invite competitive designs for erection of Municipal offices and a Town Hall, to cost 50,000*l.* Premiums of 150*l.* (supplementary), 175*l.*, and 125*l.* Mr. E. Guy Dawber, F.R.I.B.A., has been appointed assessor. See article on page 686 and advertisement on page iv. in our issue of December 3. Also see advertisements in issues of November 19 and January 6 for further particulars.

APRIL 6. — **Carlton.** — SEWERAGE AND SEWAGE DISPOSAL SCHEME.—The Barnsley R.D.C. require a sewerage and sewage disposal scheme, with plans and estimates, for a portion of the parish of Carlton. Further information may be obtained from Mr. James Senior, the Clerk to the Parochial Committee, Carlton, near Barnsley.

APRIL 15.—**Havana.**—Project for a Presidential Palace. See "Competition News" in issue of November 26. Particulars may be obtained at the Cuban Legation, 3, Grosvenor-mansions, Victoria-street, S.W.

MAY 15.—**Chesterfield.**—The Standing Joint Committee for Derbyshire invite designs for the erection of a Court-house and lock-up, at a cost of 8,000*l.* Mr. Frank Baggallay, F.R.I.B.A., is appointed assessor. Open only to architects practising in the county. Particulars, 3*l.* 3s. deposit, from Mr. Geo. C. Copstick, L.R.I.B.A., County Offices, Derby.

JUNE 10. — **Aspatria, Cumberland.** — The U.D.C. invite engineers to submit plans for estimates of a scheme of sewerage. The surveyor will give particulars required.

AUGUST 15.—**Berne.**—Designs for the erection of a monument at Berne to celebrate the foundation of the International Telegraph Union. Conditions may be seen in the library of the Royal Institute of British Architects.

AUGUST 21.—**Athens.**—COURT OF JUSTICE.—An international competition is instituted by the Ministry of the Interior, for the erection of Court buildings, to cost 160,000*l.* The *Official Gazette* may be seen at the Library of the R.I.B.A.

NOVEMBER 1. — **City of St. Petersburg.** — MONUMENT TO ALEXANDER II.—Particulars in our issue of August 13, 1910.

DECEMBER 29. — **Glasgow.** — DESIGN FOR A BRIDGE.—Designs are invited (Alexander Thomson Travelling Studentship) for a bridge. Preminums of 60*l.* and 20*l.* are offered. See advertisement in issue of December 24 for further particulars.

NO DATE. — **Bradford.** — INFIRMARY. — The Board of Management of the Bradford Royal Infirmary invite competitive plans, with estimates, for the erection of a new infirmary on a site in Duckworth-lane. See advertisement in issue of December 31 for further particulars.

NO DATE.—**Leicester.**—PROPOSED PUBLIC HALL.—The Corporation invite the practising architects of Leicester, having offices in the town, to supply plans, designs, and estimates for the construction of a new Public Hall, proposed to be erected on land adjoining the Victoria Park and Regent-street. Conditions of competition can be obtained on application, accompanied by a deposit of 1*l.* 1s., being made to Mr. E. George Mawbey, M.Inst.C.E., Borough Surveyor, Town Hall, Leicester.

NO DATE. — **Lowestoft.** — SCHOOL. — The Lowestoft Education Committee invite designs for an elementary school. Premiums offered, 21*l.*, 10*l.* 10s., and 5*l.* 5s. See advertisement in issue of February 10 for further particulars.

NO DATE.—**Rio de Janeiro.**—The Chamber of Deputies of Brazil contemplate the erection of a Faculty of Medicine, with a clinical hospital, in Rio de Janeiro. Conditions may be seen at the Office National du Commerce, 3, Rue Feydean, Paris.

NO DATE.—**Southampton.**—NEW BUILDINGS.—The Council of Hartley University College invite designs for proposed new buildings. See advertisement in issue of January 6 for further particulars.

Contracts.

BUILDING.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

FEBRUARY 27.—**Aberavon.**—ELECTRIC THEATRE.—For the erection of an electric theatre. Plans, etc., may be seen at the offices of Mr. W. B. Jones, architect, 41, Wind-street, Swansea; and Mr. J. A. James, architect, Port Talbot, and bills of quantities obtained on deposit of 1*l.* 1s.

FEBRUARY 27.—**Adelaide and Windsor, near Belfast.**—TANK-HOUSE, ETC.—The Directors of the Great Northern Railway Company (Ireland) invite tenders for the erection of a tank-house and conveniences. Drawings, etc., may be inspected at the Chief Engineer's Office, Amiens-street Terminus, Dublin, and the District Engineer's Office, Belfast. Quantities, etc., may be obtained, on payment of 2*l.*, from Mr. T. Morrison, Secretary, Secretary's Office, Amiens-street Terminus, Dublin.

FEBRUARY 27.—**Barry.**—COTTAGES.—Glamorgan C.C. invite tenders for the erection of cottages in connexion with the Wenvoe, Cwmciddy, and Calcot-road schemes. Plans, etc., may be seen, and form obtained, at the offices of Mr. W. E. R. Allen, Deputy-Clerk of the C.C., Glamorgan C.C. Offices, Westgate-street, Cardiff.

FEBRUARY 27.—**Blackwood.**—HOUSES.—For the erection of twelve or more houses for the Gladstone Building Club. Plans, etc., may be seen at the office of Mr. Ralph Simmonds, architect and surveyor, Blackwood and Bedwas.

FEBRUARY 27.—**Carnarvon.**—ADDITIONS TO INSTITUTE.—For making additions to the Institute, Carnarvon. Plans, etc., to be seen at the office of Mr. Rowland Lloyd Jones, M.S.A., architect, 14, Market-street, Carnarvon.

FEBRUARY 28.—**Bridlington.**—ALTERATIONS TO HOUSE.—For alterations to "Ferndale House," for Mr. W. Day. Drawings, etc., may be inspected at the office of Mr. J. Earnshaw, architect, Carlton House, Bridlington.

FEBRUARY 28.—**Cork.**—RESIDENCE.—For the erection of a new residence for Mr. Nicholas Fitzgerald, J.P., Fortlands, Charleville, from the plans, etc., prepared by Mr. Samuel F. Hynes, F.R.I.B.A., 5, South Mall, Cork, from whom quantities can be had on payment of 1*l.* deposit.

FEBRUARY 28.—**Freshwater, I. of W.**—ADDITIONS TO DRILL-HALL.—Southampton County Territorial Force Association invite tenders for additions to the drill-hall. Plans, etc., may be seen on application to Company-Sergeant-Major Graham, R.E., at the Drill-hall, Freshwater, up to February 25. Quantities and form may be obtained, on payment of the sum of 2*l.* 2s., on application at the offices of Mr. R. H. P. Bevis, architect, Elm Grove-chambers, Southsea.

FEBRUARY 28. — **Harpenden.** — OFFICES.—The U.D.C. invite tenders (from Harpenden builders only) for the erection of surveyor's offices adjoining the Council's fire-station. Plan, etc., may be seen, and quantities obtained, from Mr. John H. Leverton, Surveyor to the Council, at his office, Public Hall, Harpenden, between the hours of 9.30 and 10.30 a.m.

FEBRUARY 28.—**Strathspey.**—COTTAGES, ETC.—For building cottages, etc., on the Strathspey Estate. Plans, etc., may be seen at the Strathspey Estate Office, Grantown-on-Spey.

* MARCH 2. — **Blyth.**—POST-OFFICE.—The Commissioners of H.M. Works and Public Buildings invite tenders for new Post-office at Blyth. See advertisement in this issue for further particulars.

* MARCH 2. — **London, W.** — TELEPHONE EXCHANGE.—The Commissioners of H.M. Works and Public Buildings invite tenders for erection of the Western Telephone Exchange. See advertisement in this issue for further particulars.

MARCH 2.—**Sheffield.**—PUBLIC BATHS.—The City Council invite tenders for the works of all trades required in the erection of new public baths at Corporation-street and Mowbray-street. Drawings may be seen, and quantities, etc., obtained, on application to the City Architect, Town Hall, Sheffield.

MARCH 3.—**Halifax.**—ADDITIONAL STORY.—For the various works required in the ...ion of additional story to Fenton-road Work. Plans, etc., may be seen, and quantities obtained, from Monday, Feb. 27, at the offices of Messrs. Medley Hall & Son, architects, 1, Harrison-road, Halifax.

MARCH 4.—**Blakeney, Glos.**—SCHOOL OUT-OFFICES, ETC.—For (*a*) erection of new out-offices at Blakeney Church of England School; (*b*) the division of schoolroom with glazed partition; (*c*) removal of gallery in infant's-room, etc. Plans, etc., may be seen at Church House, Blakeney.

MARCH 4.—**Edinburgh.**—SCHOOL.—The School Board invite tenders for the works in connexion with the erection of Tynecastle School, M'Leod-street. Plans may be seen, and schedules obtained, at the office of Mr. J. A. Carfrae, architect, 3, Queen-street.

MARCH 4.—**Guildtown.**—HALL.—The Hall Committee invite tenders for works in connexion with the new hall. Plans, etc., may be seen at the offices of Mr. Chalmers, architect, 15, High-street, Perth, who will give all information.

MARCH 4.—**Leeming.**—SCHOOL OUT-OFFICES.—North Riding of Yorkshire C.C. Education Committee invite tenders for proposed new out-offices at the Council school. Plans, etc., may be inspected on application to the Inspector of Buildings at the County Hall.

MARCH 4.—**Middlesbrough.**—SCHOOL ADDITIONS.—The Education Committee invite tenders for new wing, with alterations and additions, at Industrial Schools, Linthorpe. Plans, etc., may be seen, and quantities obtained, at the office of Mr. S. E. Burgess, M.Inst.C.E., Borough Engineer and Surveyor, Municipal-buildings, Middlesbrough.

MARCH 6. — **Armagh.** — RENOVATION. — The U.D.C. invite tenders for renovation of a building, known as the Markethouse, for use as a technical school, in accordance with plans, etc., prepared by Mr. John Caffrey, M.R.S.I. Tender forms, etc., will be supplied on payment of a sum of 5s. (not returnable). Mr. James Lennon, Town Clerk, City Hall, Armagh.

MARCH 6.—**Kingstown, Co. Dublin.**—ALTERATIONS.—For the alteration of premises, for the Directors of the Ulster Bank, Ltd. Plans, etc., may be seen with Messrs. Blackwood & Jury, MM.R.I.A.I., architects, 41, Donegall-place, Belfast, and schedules of quantities may be obtained from Messrs. W. H. Stephens & Sons, 13, Donegall-square North, Belfast, on deposit of 2*l.* 2s.

MARCH 6.—**Normanton.**—CARETAKER'S LODGE, WALLS, FENCING, ETC.—The U.D.C. invite tenders for the erection of caretaker's lodge, conveniences, boundary walls, bandstand, fencing, etc., at Haw Hill Park. Plans, etc., may be seen, and further particulars obtained, at the Council Offices, Normanton, on application to Mr. A. Hartley, Architect and Surveyor.

MARCH 6. — **Norwich.** — UNDERGROUND CONVENIENCE.—The Executive Committee of the Norwich Corporation invite tenders for the erection of an underground convenience in Earlham-road. Plans, etc., may be seen, and specification, etc., obtained, upon a deposit of 5*l.* at the office of Mr. Arthur E. Collins, M.Inst.C.E., City Engineer, Guildhall, Norwich.

* MARCH 7. — **Bridgwater.**—COURT-HOUSE AND POLICE-STATION.—The Bridgwater T.C. invite tenders for Court-house and Police-station, Northgate, Bridgwater. See advertisement in this issue for further particulars.

MARCH 7.—**Carrbridge, Duthil.**—MANSE.—The erection of a manse. Plans, etc., may be seen with the architect, Mr. Alex. Cattanach, Kingussie.

MARCH 8. — **Clayton-le-Moors.** — ELEMENTARY SCHOOL.—The Lancashire Education Committee invite tenders for the erection of a new elementary school at Clayton-le-Moors, near Accrington, to accommodate 810 scholars. Plans may be seen, and quantities obtained, at the office of the County Architect, Mr. Henry Littler, 16, Ribblesdale-place, Preston, on deposit of 2*l.*

MARCH 9.—**Derby.**—SCHOOL.—The Education Committee invite tenders for the erection of a new school in Reginald-street. Plans, etc., may be seen, and specification, etc., obtained, on deposit of 1*l.* 1s., on application to Messrs. Currey & Thompson, architects, 3, Market-place, Derby.

* MARCH 11.—**Chase Town.**—SCHOOL.—Tenders

BUILDING—*continued.*

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

are invited for the erection of a Council school for 258 infants. See advertisement in this issue for further particulars.

MARCH 11. — **Harrow-on-the-Hill.** — CONVENIENCES, SHELTERS, ETC.—The U.D.C. invite tenders for the erection of conveniences, shelters, Stores, etc., the Harrow Recreation Ground. Specification, etc., may be obtained from, and the drawings inspected at, the offices of Mr. J. Percy Bennetts, Engineer and Surveyor to the Council, upon payment of 1*l.*

✱ MARCH 11.—**Tamworth.** — SCHOOL.—Tenders are invited for the erection of High School for 120 girls. See advertisement in this issue for further particulars.

MARCH 13.—**Bolton.**—SCHOOL.—The Education Committee invite tenders for the erection of a school in Flash-street. Quantities will be supplied to contractors who make application by post and enclose a remittance of 1*l.* 1s. Mr. Fred. Wilkinson, Director of Education, Education Offices, Nelson-square, Bolton.

✱ MARCH 14.—**London, E.**—CAR-SHEDS.—The West Ham B.C. invite tenders for addition to tramway car-sheds, Greengate-street, Plaistow. See advertisement in this issue for further particulars.

✱ MARCH 17.—**London, N.**—MAINTENANCE WORK.—The Commissioners of H.M. Works and Public Buildings invite tenders for execution of maintenance work to buildings in London (north district). See advertisement in this issue for further particulars.

✱ MARCH 17.—**London, S.**—MAINTENANCE WORK.—The Commissioners of H.M. Works and Public Buildings invite tenders for execution of maintenance work to buildings in London (south district). See advertisement in this issue for further particulars.

MARCH 31.—**Gellifaelog.**—COUNCIL SCHOOLS.—Merthyr Tydfil Borough Education Committee invite tenders for (1) infants' school; (2) boys' school; (3) girls' school; (4) manual instruction and combined domestic science block; (5) playground, drainage, etc. Plans, etc., may be seen at the office of the Architect, Mr. J. Llewellin Smith, M.S.A., Aberdare, from whom specifications, etc., may be obtained on deposit of 5*l.* 5s.

✱ APRIL 3.—**Croydon.**—DRILL-HALL.—The Territorial Force Association of the County of Surrey invite tenders for new drill-hall premises, Mitcham-road, Croydon. See advertisement in this issue for further particulars.

ENGINEERING, IRON, AND STEEL.

FEBRUARY 28.—**Halifax.**—COOLING TOWER.—The Tramways and Electricity Committee invite tenders for the supply and delivery of one natural draught chimney type water-cooling tower. Specifications, etc., may be obtained on application to Mr. W. M. Rogerson, M.I.E.E., Borough Electrical Engineer, Electricity Works, Foundry-street, Halifax, upon payment of 10*l.*

FEBRUARY 28. — **India.** — BRIDGEWORK. — The Secretary of State for India in Council invite tenders to supply Bridgework. Conditions may be obtained on application to the Director-General of Stores, India Office, Whitehall, S.W.

MARCH 1.—**Blackpool.**—RAILINGS.—For the supply and delivery here of ornamental cast-iron standards, ornamental wrought-iron standards, and galvanised wrought-iron tube railing, all in accordance with a specification and drawing, copy of which can be obtained, on deposit of 10s. 6d., from Mr. John S. Brodie, Borough Engineer and Surveyor, Town Hall, Blackpool.

MARCH 1.—**India.**—BRIDGES.—The East Indian Railway Company invite tenders for the supply and delivery of jumna bridges at Allahabad and Delhi, as per specification, to be seen at the Company's Offices. For each specification a fee of 1*l.* 1s. is charged, which cannot be returned. Mr. C. W. Young, Secretary, Nicholas-lane, London, E.C.

MARCH 1.—**Manchester.**—CAST-IRON PIPES.—The Gas Committee invite tenders for the supply of about 700 tons of cast-iron main pipes. Specification, etc., may be obtained on written application to Mr. Frederick A. Price, Superintendent of the Department.

MARCH 2.—**India.**—GIRDER BRIDGES.—The Assam-Bengal Railway Company, Ltd., invite tenders for girder bridges (100-ft. spans). Specifications, etc., may be obtained at the offices of the Company, Bishopsgate House, 80, Bishopsgate, London, E.C. A fee of 1*l.* 1s. is charged for each specification, which cannot be returned. Drawings may be had, at the cost of the tenderer, by application to Messrs. Hodges Bennett & Co., 113, Cheapside, E.C.

MARCH 3.—**Bournemouth.**—SEA WALL, ETC.—The T.C. invite tenders for the construction of a sea wall and undercliff drive. Full particulars and forms can be obtained, and plans may be seen, at the office of Mr. F. W. Lacey, M.Inst.C.E., Borough Engineer, Municipal Offices, Bournemouth, provided that 2*l.* 2s. has been previously deposited with him.

MARCH 6.—**York.**—RENEWAL OF BRIDGES.—The Directors of the North-Eastern Railway invite tenders for the renewal of fifteen bridges on the Hull and Doncaster Railway. Plans may be seen, and specification, etc., obtained, on personal application at the office of Mr. C. F. Bengough, the Company's Engineer at York.

MARCH 7.—**Bradford.**—STEEL ROOFS AND STANCHIONS.—The Corporation invite tenders for the construction at the new sludge disposal works, Strangford, of steelwork in roofs. Further particulars, and quantities, etc., may be obtained at the office of Mr. Joseph Garfield, Assoc.M.Inst.C.E., Esholt Hall, Shipley (station, Apperley Bridge, Midland Railway), on payment of 3*l.* 3s.

MARCH 7. — **Edinburgh.** — WATER-COOLING TOWERS.—The Corporation invite tenders for two water-cooling towers in connexion with the electricity supply station at Dewar-place (specification No. 62). Specification, etc., can be obtained from the Engineer, Dewar-place, Edinburgh, on deposit of 2*l.* 2s., and they may be seen only at the offices of Sir Alexr. Kennedy, 17 Victoria-street, London, and Mr. C. Stanley Peach, Victoria-mansions, 28, Victoria-street, London.

MARCH 7.—**Manchester.**—RAILWAY STORES.—The Great Central Railway Company invite tenders for the supply of stores and materials. Specifications, etc., can be obtained on application by post from Mr. Walter Williams, Stores Superintendent, Great Central Railway, Gorton, Manchester.

MARCH 9.—**Capetown.**—FERRO-CONCRETE PIER.—The Corporation of the City of Capetown invite tenders for the material required in the construction of the Adderley-street Pier in ferro-concrete. Specifications for cement, steel bars, and pile shoes may be obtained on application at the offices of Messrs. Davis & Soper, Agents of the Corporation of the City of Capetown, 54, St. Mary's-axe, London, E.C.

MARCH 11.—**Harrow-on-the-Hill.**—IRON FENCING.—The U.D.C. invite tenders for supplying unclimbable wrought-iron railing, together with entrance-gates, etc., for the Harrow Recreation Ground. Specification, etc., may be obtained from, and the plan of the ground inspected, at the office of Mr. J. Percy Bennetts, the Engineer and Surveyor to the Council, upon payment of 1*l.*

✱ MARCH 14.—**London, E.**—BRIDGE.—The West Ham B.C. invite tenders for a bridge, about 60-ft. span, at Cook's-road, Stratford. See advertisement in this issue for further particulars.

FURNITURE, PAINTING, MATERIALS, etc.

FEBRUARY 28.—**Llwynypia.**—FURNISHING INFIRMARY.—The Pontypridd Guardians invite tenders for certain articles required in connexion with the furnishing of the new Infirmary at the Union Homes. Particulars may be obtained from the Master, and samples seen at the Union Homes, Llwynypia.

✱ FEBRUARY 28.—**London, N.W.**—ANNUAL CONTRACTS.—The Willesden D.C. invite tenders for execution of works and supply of materials. See advertisement in this issue for further particulars.

MARCH 2. — **Sunderland.** — WORKS AND MATERIALS.—The Corporation invite tenders for works and materials for one year. The samples may be seen, and specifications and forms obtained, on application to the Borough Engineer, Town Hall, Fawcett-street, Sunderland.

MARCH 6.—**Broadstairs.**—CEMENT, PIPES, ETC.—Broadstairs and St. Peter's U.D.C. invite tenders for Portland cement, stoneware pipes, copper street lanterns, etc. Specifications, etc., together with any other information required, may be obtained upon application to the Town Surveyor, Mr. Howard Hurd, C.E.

✱ MARCH 7.—**Brentford.**—BROKEN GRANITE.—The Brentford U.D.C. invite tenders for 125 yds. of broken granite. See advertisement in this issue for further particulars.

MARCH 7.—**Bridgend.**—BUILDER'S MATERIALS.—The Committee of Visitors of the Glamorgan County Asylum invite tenders for the supply and delivery of builder's materials. Forms and any information may be obtained on application to Mr. Hugh W. Davies, Clerk and Steward.

MARCH 8.—**Newcastle-on-Tyne.**—PAINTING.—The Directors of the North-Eastern Railway invite tenders for painting the station buildings, etc., on certain branches. Specifications, etc., may be obtained on application to Mr. Charles A. Harrison, the Company's Engineer, Forth Banks, Newcastle-on-Tyne.

MARCH 8.—**Twickenham.**—STREET LIGHTING.—The U.D.C. invite tenders for the lighting by gas or electricity of the whole or portion (not being less than 200) of the public street lamps in the district for twelve months. Further particulars can be obtained on application at the office of Mr. Fred W. Pearce, F.S.I., Surveyor to the Council, Town Hall, Twickenham.

MARCH 8.—**Ventnor, I.W.**—TIMBER GROYNE.—The U.D.C. invite tenders for the construction of a new timber groyne. Plans, etc., may be seen at the office of Mr. H. Hughes Oakes, the Engineer and Surveyor to the Council, Town Hall, Ventnor, I.W.

MARCH 11.—**Hertford.**—DESKS.—The Hertfordshire C.C. invite tenders for the supply of desks to public elementary schools for three years. Forms can be obtained on application from the Education Department, Hertford.

MARCH 13.—**Queen's Ferry, Flints.**—PAINTING.—Flintshire C.C. Queen's Ferry Bridge Committee invite tenders for the cleaning down, scraping, and afterwards painting the Queen's Ferry Opening Bridge over the River Dee. Specifications may be obtained from Mr. Sam Evans, F.S.I., County Surveyor, County Offices, Mold.

NO DATE.—**Blackpool.**—FURNISHING OFFICES.—The Corporation invite tenders for furnishing the new offices of the Health and Cleansing Departments. For specifications and details apply to Mr. E. W. Rees Jones, Medical Officer of Health, 21, Birley-street, Blackpool.

ROADS, SANITARY, AND WATER WORKS.

FEBRUARY 25. — **Ross.** — FARM BUILDINGS.—Herefordshire C.C. Small Holdings and Allotments Committee invite tenders for the erection of two sets of buildings on Hildersley Farm. Plans, etc., can be seen at office of Mr. Ernest W. Hill, County Land Agent, 132, St. Owen-street, Hereford. Bills of quantities will be forwarded on payment of 1*l.* 1s.

FEBRUARY 27.—**East Molesey.**—ROAD MATERIAL.—The U.D.C. of East and West Molesey invite tenders for the supply and delivery of road material. Specifications, etc., may be obtained upon application to the Surveyor, District Council Offices, East Molesey.

FEBRUARY 27.—**Macclesfield.**—ROAD MATERIALS, ETC.—The R.D.C. invite tenders for the supply of road stone, setts, earthenware pipes, etc. Forms may be had on application to the Assistant Clerk, at the Union Offices, Macclesfield.

FEBRUARY 28. — **Foleshill.** — GRANITE.—The R.D.C. invite tenders for the supply of granite. Forms of tender, giving all particulars, may be had on application to the Surveyor, Council Offices, Foleshill.

FEBRUARY 28.—**Pershore.**—STONE AND CHIPPINGS.—The R.D.C. invite tenders for the supply of stone and chippings for the current year. Forms may be obtained on application to Mr. Arthur E. Baker, Clerk to the Council, Union Offices, Pershore.

FEBRUARY 28. — **Portland.** — GRANITE. — The U.D.C. invite tenders for the supply of about 2,600 tons of broken granite or basalt. Specification and form may be obtained at the office of Mr. R. Stevenson Henshaw, Engineer and Surveyor, Council Offices, New-road, Portland.

FEBRUARY 28.—**Woodford.**—GRANITE, ETC.—The U.D.C. invite tenders for small granite and granite chippings, tar, etc. Particulars may be obtained from Mr. William Farrington, Surveyor to the Council, Council Offices, Woodford Green, Essex.

MARCH 1.—**Glan Llyn.**—WIDENING AND IMPROVING MAIN ROAD.—The Glamorgan C.C. invite tenders for the widening and improving of the Cardiff and Pontypridd main road between Glan Llynn and Nantgarw. Plans, etc., may be seen, and quantities obtained, at the Police-station, Taff's Well, and at the offices of Mr. W. E. R. Allen, Deputy-Clerk of the C.C., Glamorgan C.C. Offices, Westgate-street, Cardiff.

MARCH 1.—**Huddersfield.**—HIGHWAY MATERIALS.—The Corporation invite tenders for the supply and delivery of materials. Specifications, etc., may be obtained on application at the offices of the Borough Engineer and Surveyor, 1, Peel-street.

MARCH 2.—**Hampton.**—MATERIALS.—The U.D.C. invite tenders for granite, etc. Forms of tender, etc., may be obtained at the offices of the Council, Hampton, Middlesex.

MARCH 2.—**Oldham.**—SEWERING, PAVING, ETC.—The Surveyor's Committee invite tenders for the sewering, paving, and completing of a number of passages. Plans, etc., can be seen, and quantities, etc., obtained, at the Borough Surveyor's Office.

MARCH 2.—**Wigston Fields.**—SEWERAGE.—Wigston Magna U.D.C invite tenders for the construction of sewerage works (contract No. 1), and the supply of gas-engine, air compressors, and Shone ejectors (contract No. 2). Plans, etc., may be seen, and quantities, with form, obtained, from Mr. W. G. J. Clark, Engineer, Council's Offices, Station-road, Wigston Magna, on payment of 2*l.*

MARCH 3.—**Newmarket.**—ROADS.—The U.D.C. invite tenders for the reconstruction and waterproofing of the surfaces of certain roads. Specification, etc., may be had on application to the Surveyor, Mr. C. H. Waithman, A.M.Inst.C.E., at his offices, Town Hall, Newmarket.

MARCH 4. — **Faversham.** — GRANITE. — The R.D.C. invite tenders for the supply and delivery of 1,500 tons of best broken Guernsey granite. Form of tender and further particulars can be had on application to the District Surveyor, Mr. J. G. Chittenden, Ashford-road, Faversham.

MARCH 4.—**Killamarsh.**—SEWAGE WORKS.—Chesterfield R.D.C. invite tenders for the construction of sewage purification works, etc. Plans may be seen, and specifications, etc., obtained, on payment of 2*l.* 2s., from Mr. Henry Hudson, C.E., P.A.S.I., Engineer and Surveyor to the Council, Union Offices, Chesterfield.

MARCH 4.—**Manchester.**—ROAD MATERIALS, ETC.—The Withington Committee invite tenders for the supply of highway and sewer material. Application for further particulars and forms should be accompanied by a stamped addressed envelope, and addressed, as regards the Highway and Sewers Department, to "The Surveyor, Town Hall, West Didsbury, Manchester."

MARCH 4.—**Newburn.**—HIGHWAY MATERIALS.—The U.D.C. invite tenders for the supply of highway materials. Particulars can be obtained from Mr. Thomas Gregory, Council Offices, Newburn.

MARCH 4. — **Woolaston.** — WATER SCHEME.—Lydney R.D.C. invite tenders for the providing and laying of about three miles of cast-iron water mains, together with standposts and other fittings; also for the construction of a cement concrete covered service etc. Specifications, etc., may be obtained, on payment of 3*l.* 3s., from Major Hector Tulloch, C.B., R.E., and Mr. Henry J. Weaver, M.Inst.C.E., I., M.I.Mech.E., F.G.S., Engineers to the Council, Northgate-mansions, Gloucester.

MARCH 6.—**Cambridge.**—STONEWARE PIPES, AND FITTINGS, CEMENT, ETC.—The U.D.C. invite tenders for the supply of stoneware pipes, cement, gravel, sand, etc. Specifications, etc., may be obtained at the office of the Borough Surveyor, Guildhall.

MARCH 6.—**Colne.**—MACADAM, ETC.—The Highways and Streets Committee invite tenders for the supply and delivery of materials for twelve months. Specifications, etc., may be obtained on application at the office of the Borough Surveyor, Mr. T. H. Hartley, Town Hall, Colne, Lancs.

MARCH 6.—**Dunvant and Three Crosses.**—WATER MAINS.—The Gower R.D.C. invite tenders for supplying and laying water mains, including the supplying and fixing of valves, etc. Plans may be inspected at the offices of Messrs. Morgan Davies & Partners, the engineers, at 3, Gloucester-place, Swansea, and specifications,

ROADS, etc.— *continued.*

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

etc., may be obtained from them on payment of 2*l.* 2s.

MARCH 6.—**Lichfield.**—GRANITE, ETC.—The R.D.C. invite tenders for the supply and delivery of granite and chippings and slag during the ensuing twelve months. Further particulars and forms of tender may be obtained upon application to Mr. C. O. Rawstron, District Surveyor, Lichfield.

MARCH 6.—**Milnathort.**—DRAINAGE AND SEWAGE DISPOSAL.—The C.C. of Kinross invite tenders for providing, etc., about 6,300 lin. yds. of fireclay and cast-iron pipes; also the construction of concrete and brickwork tanks, percolating filters, and other works. Plans, etc., may be seen, and schedules, etc., obtained, at the office of Messrs. Niven & Haddin, C.E., 131, West Regent-street, Glasgow, on payment of 1*l.* 1s.

MARCH 6.—**Nuneaton.**—PAVING MATERIALS, ETC.—The Corporation invite tenders for the supply of blue bricks, kerbs, earthenware pipes, etc. Conditions, etc., may be obtained on application to Mr. F. C. Cook, Borough Surveyor, Municipal Offices, Nuneaton.

MARCH 6.—**Yardley.**—ROAD MATERIAL, ETC.—The R.D.C. invite tenders for the supply of granite, limestone, stone paving, slag, stoneware pipes, etc., blue bricks, etc. Particulars and forms may be obtained on application to Mr. C. E. Lawton, Surveyor and Engineer to the Council, Council House, Sparkhill, near Birmingham.

MARCH 7.—**Birmingham.**—STORES.—Birmingham, Tame, and Rea District Drainage Board invite tenders for the supply of stores and materials for one year. Samples and patterns must be inspected at the Board's Offices, Tyburn, near Birmingham (Castle Bromwich Station, Midland Railway), where conditions, etc., may be obtained.

MARCH 7.—**Chingford.**—GRANITE, ETC.—The U.D.C. invite tenders for granite, etc. Forms may be had on application, and copies of the several contracts seen, at the Council Offices, 34, Station-road, Chingford.

MARCH 7.—**Potterspury.**—GRANITE AND SLAG.—The R.D.C. invite tenders for the supply of granite (broken and unbroken) and slag for the year. Forms, etc., may be obtained on application to Mr. James B. Fairchild, Potterspury, Stony Stratford, the Surveyor to the Council.

MARCH 7.—**Seaham and Seaton.**—SEWERAGE.—Easington R.D.C. invite tenders for the construction of stoneware pipe sewer, storage tanks, pumping-station, and cast-iron rising main at New Seaham, Durham. Plans, etc., may be seen, and quantities obtained, on and after the 20th inst., on application to the Engineer, Council Offices, Easington, Castle Eden, R.S.O., Durham, upon deposit of 2*l.*

MARCH 7.—**Westhoughton.**—MATERIALS AND STORES.—The U.D.C. invite tenders for the supply of road materials and stores. Further particulars and form may be obtained on application to Mr. Thos. Partington, Clerk to the Council, Town Hall, Westhoughton, and if to be sent by post enclosing a stamped addressed envelope (foolscap).

MARCH 8.—**Barking.**—ROAD WIDENING.—Barking Town U.D.C. invite tenders for fencing, making-up, metalling, channelling, kerbing, flagging, etc., in connexion with the widening of Ripple-road. Plans, etc., can be seen, and specification, etc., obtained, upon application to Mr. C. F. Dawson, Surveyor to the Council, Public Offices, Barking.

MARCH 8. — **Chester-le-Street.** — ROAD MATERIAL, ETC.—The U.D.C. invite tenders for the supply of various road materials for one year. Specifications, etc., may be obtained on application to Mr. Wm. Ridley, Surveyor, Council-chambers, Front-street, Chester-le-Street.

MARCH 8.—**Thames Ditton.**—ROAD MATERIAL, ETC.—The U.D.C. invite tenders for supplying road material, stoneware pipes, kerb, setts, etc. Forms may be obtained on application to Mr. H. C. Fread, Surveyor to the Council, enclosing a stamped addressed foolscap envelope.

MARCH 8.—**Twickenham.**—ROAD MATERIAL.—The U.D.C. invite tenders, for a period of one, two, or three years, for the supply of ballast, shingle, flints, gravel, granite cubes and setts, Portland cement, drain pipes, etc. Forms of tender, etc., may be obtained on application to Mr. Fred W. Pearce, F.S.I., Surveyor to the Council, Town Hall, Twickenham.

✱ MARCH 9.—**London, N.**—ROADS.—The Guardians of St. Mary, Islington, invite tenders for repairs and remaking of roads at St. John's-road Workhouse, Upper Holloway. See advertisement in this issue for further particulars.

MARCH 11.—**Belper.**—ROAD MATERIALS, ETC.—The R.D.C. invite tenders for the supply of the various materials required for the maintenance of the highways. Specification, etc., may be obtained upon application to Mr. Robert C. Cordon, Engineer and Surveyor, Surveyor's Office, Duffield, near Derby.

MARCH 11.—**Eastbourne.**—ROAD MATERIAL AND STORES.—The T.C. invite tenders for the supply of Portland cement, granite, stone, bricks, pipes, etc. Specifications may be seen, and forms obtained, at the Borough Surveyor's Office, Town Hall, Eastbourne.

✱ MARCH 13.—**London, S.W.**—ROAD-MAKING.—The Wandsworth B.C. invite tenders for making-up and paving new streets. See advertisement in this issue for further particulars.

NO DATE.—**Abingdon.**—ROAD STONE.—The R.D.C. invite tenders for the supply of about 4,000 tons of road stone. For forms of tender apply to Messrs. B. & E. M. Challenor, Clerks to the Council, Abingdon, Berks.

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*FREEHOLD BUILDING SITE, HAMMERSMITH, W.—At the Mart	Farebrother, Ellis, Egerton, Breach, Galsworthy, & Co.	Mar. 2
*OAK TIMBER (TREES), DEAL—On the Premises	West, Usher, & Co.	Mar. 8
*FREEHOLD BUILDING SITE, MARYLEBONE-ROAD, W.—At the Mart	Towers, Ellis, & Co.	Mar. 14
*FREEHOLD SITE, BAYSWATER-HILL, W.—At the Mart	Messrs. Trollope	Mar. 15
*BUILDING LAND AND MANSION, BOSCOMBE—At the Mart	Daniel Smith, Son, & Oakley	April 5

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

February 8.—By LANGLANDS & SONS (at Epsom).

Epsom.—Ashley-rd., Worple Lodge, f. £2,710

February 13.—By G. B. HILLIARD & SON.

Danbury, Essex.—Slough House Farm, 62 a. 2 r. 34 p., f. 2,000

Three cottages and enclosures, 45 a. 3 r. 3 p., f. 1,187

By JONES, LANG, & CO.

Norwood.—Ladbrook-rd., f.g.r. 24*l.*, reversion in 77 yrs. 480

February 14.—WEATHERALL & GREEN.

Woking.—Mount Hermon-rd., Stoneleigh, f., p. 1,500

February 15.—By FOSTER & CRANFIELD.

Peckham.—Radnor-st., f.g.r. 14*l.* 10s., reversion in 146 yrs. 370

By MARK LIELL & SON.

Bromley.—37 and 39, Tapley-st, u.t. 27½ yrs., g.r. 5*l.*, w.r. 54*l.* 12s. 150

East Ham.—367, Sherrard-rd., f., w.r. 29*l.* 18s. . 205

By E. & A. SWAIN.

Notting Hill.—1, St. Johns-gds., u.t. 28½ yrs., g.r. etc., 17*l.* 2s., p. 1,200

By WYATT & SON (at Chichester).

Sidlesham, Sussex.—Freehold farm, 27a. 1r. 15p., ... 1,135

Tithe rent charge 35*l.* (lifehold) 190

Chidham, Sussex.—House, stabling, and 7 a., f. 800

February 16.—By J. G. DEAN & CO.

Merton.—3 and 5, Warren-rd., u.t. 94½ yrs., g.r. 10*l.* 10s., w.r. 65*l.* 5

By GIDDY & GIDDY.

Langley, Bucks.—Butcher's shop, cottages, and laundry premises, f., y.r. 94*l.* 10s. 850

Thornton Heath.—25, Malvern-rd., f., e.r. 30*l.* .. 390

By FISHER, STANHOPE, & CO.

Clapton.—60, Nightingale-rd., u.t. 61 yrs., g.r. 6*l.*, e.r. 32*l.* 220

By JOHN LLOYD & SONS.

Bow.—1 and 2, Harley-st., u.t. 35 yrs., g.r. 34*l.*, e.r. 76*l.* 150

By H. J. BLISS & SONS.

Plaistow.—1 to 11 (odd), Throckmorton-rd., f., w.r. 132*l.* 10s. 860

West Ham. — 1, Warmington-st., f., w.r. 19*l.* 10s. 120

Poplar.—12, Mauve-st., f., w.r. 28*l.* 12s. 200

22, Lindale-st., f., w.r. 24*l.* 14s. 190

1, 3, and 5, Hill Place-st., and 35, Northumberland-st., u.t. 54 yrs., g.r. 10*l.*, w.r. 106*l.* 12s. 405

1, Paris-ter., u.t. 37 yrs., g.r. 2*l.* 10s., w.r. 28*l.* 12s. 105

De Beauvoir Town.—33, De Beauvoir-cres., u.t. 18¼ yrs., g.r. 1*l.*, w.r. 44*l.* 4s. 150

February 17.—By SNELL & CO.

King's Cross.—7, 8, and 9, Providence-row, u.t. 80 yrs., g.r. 10*l.* 10s., w.r. 54*l.* 12s. 200

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace: cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

PRICES CURRENT OF MATERIALS.

✱,✱ Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Per 1000 Alongside, in River.

	£	s.	d.
Best Stocks	1	13	0
Picked Stocks for Facings	2	10	0

Per 1000, Delivered at Railway Depôt.

	£	s.	d.		£	s.	d.
Flettons	1	9	0	Double Headers	13	7	6
Best Fareham Red	3	12	0	One Side and two Ends	17	7	6
Best Red Pressed Ruabon Facing	5	0	0	Two Sides and one End	18	7	6
Best Blue Pressed Staffordshire	3	15	0	Splays & Squints	15	17	6
Do. Bullnose	4	0	0	Best Dipped Salt Glzd. Str'tch'rs	10	17	6
Best Stourbridge Fire Bricks	3	14	0	Headers	10	7	6
GLAZED BRICKS.				Quoins, Bullnose, and Flats	14	7	6
Best White and Ivory Glazed Stretchers	10	17	6	D'ble Stretchers	16	7	6
Headers	10	7	6	Double Headers	13	7	6
Quoins, Bullnose, and Flats	14	7	6	One Side and two Ends	17	7	6
D'ble Stretchers	16	7	6	Two Sides and one End	18	7	6
				Splays & Squints	15	17	6

Second Quality White and Dipped Salt Glazed, £1 5s. per 1000 less than best.

	s.	d.	
Thames and Pit Sand	6	9	per yard, delivered.
Thames Ballast	5	3	" "
Best Portland Cement	29	0	per ton, "
Best Ground Blue Lias Lime	19	0	" "

NOTE—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 6d. per yard delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly dpt.

STONE.

Per Ft. Cube.

	s.	d.
BATH STONE — delivered on road waggons, Paddington Depôt	1	6½
Do. do. delivered on road waggons, Nine Elms Depôt	1	8½
PORTLAND STONE (20 ft. average)—		
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	1
White Basebed, delivered on road waggons Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	2½

STONE (*continued*).

Per Ft. Cube, delivered at Railway Depôt.

	s.	d.		s.	d.
Ancaster in blocks..	1	10	Closeburn Red Freestone	2	0
Beer in blocks	1	6	Red Mansfield Freestone	2	4
Greenshill in blocks	1	10	Talacre & Gwespyr Stone	2	8
Darley Dale in blocks	2	4			
Red Corsehill in blocks	2	3			

YORK STONE—*Robin Hood Quality.*

	s.	d.
Per Ft. Cube, Delivered at Railway Depôt.		
Scappled random blocks	2	10
Per Ft. Super., Delivered at Railway Depôt.		
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3
6 in. rubbed two sides ditto, ditto	2	6
3 in. sawn two sides slabs (random sizes)	0	11½
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7½
1½ in. to 2 in. ditto, ditto	0	6

HARD YORK—

	s.	d.
Per Ft. Cube, Delivered at Railway Depôt.		
Scappled random blocks	3	0
Per Ft. Super., Delivered at Railway Depôt.		
6 in. sawn two sides landing to sizes (under 40 ft. super.)	2	8
6 in. rubbed two sides ditto	3	0
3 in. sawn two sides slabs (random sizes)	1	2
2 in. self-faced random flags	0	5

SLATES.

Per 1000 of 1200 at Railway Depôt.

In. In.	£	s.	d.	In. In.	£	s.	d.
20×10 best blue Bangor	13	2	6	20×10 best Eur'ka unfading green	15	17	6
20×12 ditto	13	17	6	20×12 ditto	18	7	6
20×10 1st quality ditto	13	0	0	18×10 ditto	13	5	0
20×12 ditto	13	15	0	16×8 ditto	10	5	0
16×8 ditto	7	5	0	20×10 permanent green	11	12	6
22×10 best blue Portmadoc	12	12	6	18×10 ditto	9	12	6
16×8 ditto	6	12	6	16×8 ditto	6	12	6

TILES.

At Railway Depôt.

	s.	d.		s.	d.
Best plain red roofing (per 1000)	42	0	Best "Hartshill" brand, plain sand-faced (per 1000) ...	50	0
Hip and Valley (per doz.)	3	7	Do. pressed (per 1000)	47	6
Best Broseley (per 1000)	50	0	Do. Ornamental (per 1000)	50	0
Do. Ornamental (per 1000)	52	6	Hip (per doz.)...	4	0
Hip and Valley (per doz.)	4	0	Valley (per doz.)	3	6
Best Ruabon red, brown, or brindled (Edw'ds) (per 1000)	57	6	Staffords. (Hanley) Reds or Brindled (per 1000)	42	6
Do. Ornamental (per 1000)	60	0	Hand-made sand-faced (per 1000)	45	0
Hip (per doz.)...	4	0	Hip (per doz.)...	4	0
Valley (per doz.)	3	0	Valley (per doz.)	3	6

WOOD.

BUILDING WOOD.	At per standard. £ s. d.		£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	14 0 0	...	15 10 0
Deals: best 3 by 9	13 10 0	...	14 10 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 10 0	...	12 10 0
Battens: best 2½ by 6 and 3 by 6	0 10 0		less than 7 in. and 8 in.
Deals: seconds	1 0 0		less thn best.
Battens: seconds	0 10 0	»	»
2 in. by in. and 2 in. by 6 in.	9 10 0	...	10 10 0
2 in. by 4½ in. and 2 in. by 5 in.	9 0 0	...	10 0 0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0 10 0		more than battens.
¼ in.	1 0 0		»
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 5 0 0	...	5 10 0
Seconds	4 10 0	...	5 0 0
Small timber (8 in. to 10 in.)	3 17 6	...	4 0 0
Small timber (6 in. to 8 in.)	3 5 0	...	3 10 0
Swedish balks	2 12 6	...	3 0 0
Pitch-pine timber (30 ft. average)	4 10 0	...	5 5 0

JOINERS' WOOD.	At per standard.		
White Sea: first yellow deals, 3 in. by 11 in.	24 10 0	...	25 10 0
3 in. by 9 in.	22 10 0	...	23 10 0
Battens, 2½ in. and 3 in. by 7 in.	17 0 0	...	18 0 0
Second yellow deals, 3in. by 11in.	19 0 0	...	20 0 0
» » 3 in. by 9 in.	18 0 0	...	19 10 0
Battens, 2½ in. and 3in. by 7 in.	14 0 0	...	15 0 0
Third yellow deals, 3 in. by 11 in. and 9 in.	14 0 0	...	15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 10 0	...	12 10 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 10 0	...	22 10 0
Do. 3 in. by 9 in.	18 10 0	...	19 10 0
Battens	14 0 0	...	15 0 0
Second yellow deals, 3 in. by 11 in	16 10 0	...	17 10 0
Do. 3 in. by 9 in.	15 0 0	...	16 0 0
Battens	11 10 0	...	12 10 0
Third yellow deals, 3in. by 11 in.	13 10 0	...	14 10 0
Do. 3 in. by 9 in.	13 0 0	...	14 0 0
Battens	10 10 0	...	11 0 0
White Sea and Petersburg— First white deals, 3 in. by 11 in.	15 0 0	...	16 0 0
» » 3 in. by 9 in.	14 0 0	...	14 10 0
Battens	11 10 0	...	12 10 0
Second white deals, 3in. by 11in.	14 0 0	...	15 0 0
» » 3 in. by 9 in.	13 0 0	...	14 0 0
Battens	10 10 0	...	11 0 0
Pitch-pine: deals	19 0 0	...	21 0 0
Under 2 in. thick extra	0 10 0	...	1 0 0
Yellow Pine—First, regular sizes	44 0 0		upwards.
Oddments	32 0 0		»
Seconds, regular sizes	33 0 0		»
Oddments	28 0 0		»
Kauri Pine—Planks, per ft. cube.	0 3 6	...	0 5 0
Danzig and Stettin Oak Logs— Large, per ft. cube	0 3 0	...	0 3 9
Small » »	0 2 6	...	0 2 6
Wainscot Oak Logs, per ft. cube	0 5 6	...	0 6 0
Dry Wainscot Oak, per ft. sup. as inch	0 0 8½	...	0 0 9½
¾ in. do. do.	0 0 7	...	—
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 10	...	0 1 1
Selected, Figury, per ft. super. as inch	0 1 6	...	0 2 6
Dry Walnut, American, per ft. super. as inch	0 0 10	...	0 1 0
Teak, per load	18 0 0	...	22 0 0
American Whitewood planks, per ft. cube	0 4 0	...	0 5 0
Prepared Flooring, etc.—	Per square.		
1 in. by 7 in. yellow, planed and shot	0 13 6	...	0 17 0
1 in. by 7 in. yellow, planed and matched	0 14 0	...	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	...	1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	...	0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	...	0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	...	0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	...	0 13 6
1 in. by 7 in. » »	0 14 0	...	0 18 6
¾ in. by 7 in. white » »	0 10 0	...	0 11 0
1 in. by 7 in. » »	0 12 9	...	0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.		£ s. d.
Rolled Steel Joists, ordinary sections	7 0 0	...	7 10 0
Compound Girders, ordinary sections	9 0 0	...	10 0 0
Steel Compound Stanchions	11 0 0	...	12 0 0
Angles, Tees, and Channels, ordinary sections	9 0 0	...	10 0 0
Flitch Plates	9 0 0	...	9 10 0
Cast Iron Columns & Stanchions, including ordinary patterns	7 10 0	...	8 10 0

METALS.

IRON—	Per ton, in London. £ s. d.		£ s. d.
Common Bars	8 10 0	...	9 0 0
Staffordshire Crown Bars, good merchant quality	8 15 0	...	9 5 0
Staffordshire "Marked Bars"	10 10 0	...	—
Mild Steel Bars	8 15 0	...	9 5 0
Hoop Iron, basis price	9 5 0	...	9 10 0
» » Galvanised (*And upwards, according to size and gauge.)	17 0 0	...	—
Sheet Iron Black— Ordinary sizes to 20 g.	9 15 0	...	—
» » 24 g.	10 15 0	...	—
» » 26 g.	12 5 0	...	—
Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15 0 0	...	—
Ordinary sizes to 22 g. and 24 g.	15 10 0	...	—
» » 26 g.	16 10 0	...	—

METALS (*continued*).

IRON (*continued*).	Per ton, in London. £ s. d.		£ s. d.
Sheet Iron, Galvanised, flat, best quality— Ordinary sizes to 20 g.	18 0 0	...	—
» » 22 g. and 24 g.	18 10 0	...	—
» » 26 g.	20 0 0	...	—
Galvanised Corrugated Sheets— Ordinary sizes, 6ft. to 8ft. 20 g.	14 10 0	...	—
» » 22 g. and 24 g.	14 15 0	...	—
» » 26 g.	16 5 0	...	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	12 0 0	...	—
Best Soft Steel Sheets, 2 g. & 24 g.	13 0 0	...	—
» » » 26 g.	15 0 0	...	—
Cut Nails, 3 in. to 6 in. (Under 3 in., usual trade extras.)	10 10 0	...	11 0 0

LEAD, &c.	Per ton, in London. £ s. d.		£ s. d.
LEAD—Sheet, English, 4lb. and up	16 7 6	...	—
Pipe in coils	16 17 6	...	—
Soil pipe	19 17 6	...	—
Compo pipe	19 17 6	...	—
ZINC—Sheet—	In casks of 10 cwt.		
Vielle Montagne	31 10 0	...	—
Silesian	31 5 0	...	—
Zinc, in bundles, 1s. per cwt. extra.			
COPPER— Strong Sheet per lb.	0 1 0	...	—
Thin » »	0 1 1	...	—
Copper nails »	0 0 10	...	—
Copper wire »	0 0 10	...	—
BRASS— Strong Sheet »	0 0 11	...	—
Thin »	0 1 0	...	—
TIN—English Ingots »	0 1 11	...	—
SOLDER—Plumbers' »	0 0 8½	...	—
Tinmen's »	0 0 11	...	—
Blowpipe »	0 1 2	..	—

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

Per Ft., Delivered.

15 oz. thirds	2¼d.	26 oz. fourths	3¼d.
» fourths	1¾d.	32 oz. thirds	5¼d.
21 oz. thirds	3¼d.	» fourths	4¼d.
» fourths	2¾d.	Fluted Sheet, 15 oz.	3¼d.
23 oz. thirds	4¼d.	» 21 oz.	4¼d.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

Per Ft., Delivered.

⅛ Hartley's	2d.	Figured Rolled, Oxford Rolled, Oceanic, Arctic, Muffled, and Rolled Cathedral, white	3¼d.
3/16 »	2¼d.	Ditto, tinted	5d.
¼ »	2⅝d.		

OILS, &c.		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 4 3
» » » in barrels	»	0 4 4
» » » in drums	»	0 4 6
Boiled ,, » in barrels	»	0 4 6
» » » in drums	»	0 4 9
Turpentine in barrels	»	0 5 1
» in drums	»	0 5 3
Genuine, Ground English White Lead,	per ton	21 10 0
Red Lead, Dry	»	20 0 0
Best Linseed Oil Putty	per cwt.	0 11 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 6
Fine Elastic Carriage	0 12 0
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 10 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flating Varnish	0 18 0
White Pale Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	0 10 9
French and Brush Polish	0 10 6

TO CORRESPONDENTS.

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TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursday.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.* unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

AMBLE.—For additions, etc., to the Infants' Council School, for the Northumberland Education Committee:—

R. & G. Brown, Amble* £283

[Seven tenders were received.]

BEESTON.—For erecting a cloth warehouse and offices, New Mills, for Messrs. John Hartley & Sons, Ltd. Mr. T. A. Buttery, F.I.A.S., architect, Morley and Leeds:—

Mason: H. Spensley, High-street, Morley	£545 14
Joiners: J. Clegg & Sons, Wesley-street, Morley	636 0
Plumber: A. Clegg, Queen-street, Morley	86 10
Plasterers: Crossley & Sons, Birstall	44 0
Slaterer: G. Rogerson, Bank-street, Morley	65 5
Ironwork: J. & J. Horsfield, Ltd., Dewsbury	73 19

BIRKENHEAD.—For conversion of dwelling houses into shops, Nos. 88 to 94, Watson-street, for Mr. H. Stacey. Mr. J. H. McGovern, architect, 26, North John-street, Liverpool:—

Sharrock, Williams, & Green* £150 0 0

CAPEACH.—For heating the new mixed schools for the Aberdare Urban District Council Education Committee. Mr. T. Roderick, architect, Aberdare:—

Hampton & Co., Cardiff* £129

EBBW VALE.—For the improvement of Rees-street, for the Urban District Council. Mr. T. J. Thomas, Town Engineer and Surveyor:—

Ebbw Valley Building Co.	£589 3 9	J. Monks & Co.	£557 1 0
A. G. Collins	586 0 3	W. Miles, Ebbw Vale*	512 0 3

FARNHAM.—For alterations and additions to drill hall and premises in Bear-lane, for the Territorial Force Association of Surrey. Messrs. Jarvis and Richards, architects, Westminster, S.W. Quantities by Messrs. Robinson & Roods, 8, New-court, Carey-street, Lincoln's Inn:—

W. H. Holden	£1,730 0 0	McC. E. Fitt	£1,277 0 0
W. German & Son	1,644 8 0	Lole & Co.	1,266 0 0
B. E. Nightingale	1,350 0 0	W. J. Renshaw	1,260 0 0
Kirk & Randall	1,347 0 0	Drowley & Co.	1,225 0 0
Gathercole Bros.	1,330 0 0	Goddard & Sons	1,219 0 0
Mardon & Mills	1,299 0 0	Jas. Crockerell	1,198 10 0
G. Parker & Sons	1,297 0 0	Crosby & Co.	1,193 0 0
J. Smith & Sons	1,280 0 0	Martin, Wells, & Co., Ltd.	1,125 0 0
		S. Ellis	1,106 0 0
		Caesar Bros., Hale, Farnham‡	1,079 0 0

‡ Recommended for acceptance.

GORLESTON-ON-SEA.—For the erection of new buildings, for the Governors of the East Anglian Institution for Blind and Deaf Children. Mr. John E. Burton, architect, Norwich:—

F. Grimble, Northgate-street, Great Yarmouth* £8,940

GRAYS (Essex).—For structural alterations, etc., at "Whitehall," Whitehall-lane, for the Guardians of the Whitechapel Union. Mr. Christopher M. Shiner, A.R.I.B.A., architect, The Gate House, Grays:—

W. T. Sanderson, 4, Milton-road, Grays, Essex,* £82

GRIMSBY.—For convenience, Tunnard-street and Hilda street. Mr. H. Gilbert Whyatt, A.M.Inst.C.E., Borough Engineer and Surveyor:—

Wilkinson Bros.	£127 19 0	Edwards & Raynor	£109 10 6
Hewins & Goodhand	116 18 8	Swaby & Walsham	99 19 0
H. & C. Thompson	116 3 11	E. Smith*	93 8 0
W. Gilbert	111 10 0		

[All of Grimsby.]

HANWELL.—For the erection of a house for the first assistant medical officer at Hanwell Asylum, for the London County Council:—

Lawrance & Sons, Ltd.	£1,323 0 0	J. Dorey & Co., Ltd	£1,045 0 0
Leslie & Co., Ltd.	1,179 0 0	W. Brown & Son	997 0 0
J. Greenwood, Ltd.	1,186 0 0	H. E. Willis	929 6 5
H. Lovatt, Ltd	1,148 0 0	E. Plaistowe, South-end	
Higgs & Hill	1,124 0 0	Southall*	919 0 0
W. J. Dickens	1,110 0 0		

HEREFORD.—For constructing sand filters at the waterworks, for the Town Council. Mr. John Parker, A.M.Inst.C.E., Surveyor to the Council:—

R. C. Brebner & Co.	£5,472 10 9	J. Denham	£4,452 0 7
Hobrough & Co.	5,241 4 6	T. Lant	4,372 8 0
Hyslop & Co.	4,952 17 9	Johnson Bros.	4,316 13 7
T. Vale & Sons	4,536 0 0	G. Law, Kidderminster‡	3,995 17 2

‡ Recommended for acceptance.

MARGATE.—For enlargement and alterations, the Albemarle Hotel, Margate. Messrs. E. R. Robson & Gott, architects:—

—	Address.	Amount.	Additional Amount for Basement.	—
		£ s. d.	£ s. d.	£ s. d.
F. J. Doughty	Margate	1,443 7 5	293 18 2	1,737 5 7
W. W. Martin	Ramsgate	1,542 0 0	277 0 0	1,819 0 0
W. H. Bowchier	Margate	1,550 0 0	325 0 0	1,875 0 0
A. G. Lockwood & Co.	Westgate-on-Sea	1,560 0 0	315 0 0	1,875 0 0
J. W. Woodhalls & Son	Ramsgate	1,586 0 0	345 10 0	1,931 10 0
Paramor & Sons	Margate	1,640 0 0	315 0 0	1,955 0 0
G. E. Wallis & Sons, Ltd.	Maidstone	1,683 0 0	311 0 0	1,994 0 0
W. E. Blake	London and Plymouth	1,750 0 0	546 0 0	2,296 0 0
Parkinson & Sons	Fisher-street, London, W.C.	1,997 0 0	417 0 0	2,414 0 0

HESWALL.—For forming and making roads, sewers, manholes, etc., Heswell Station Estate (6¼ acres), for Messrs. Montgomery & Co. Mr. J. H. McGovern, architect and surveyor:—

H. E. B. Greene & Co.	£3,488 0 0
C. L. Warren	2,566 12 6
W. Duvaney	2,527 19 3

HULL.—For Presbyterian schools, Anlaby-road. Mr. F. Brownlow Thompson, architect, Hull:—

V. Knowles	£2,819 0 0	M. Harper	£2,606 0 0
Hill & Stephenson	2,801 12 0	F. Bilton	2,597 1 11
J. E. Railton	2,750 0 0	J. H. Fenwick & Son	2,592 0 0
Marsden & Son	2,745 0 0	J. Taylor & Son	2,583 0 0
J. T. Levitt	2,730 10 0	Quibell, Son, & Greenwood, Hull*	2,552 0 0
J. Houlton & Son	2,640 0 0		
G. Houlton & Son	2,640 0 0		

LIVERPOOL.—For conversion of dwelling-houses into shops at the corners of Pimhill-street and Vronhill-street, Highpark-street, for Messrs. J. Howard Williams and Hy. Jones, J.P. Mr. J. H. McGovern, architect:—

P. Wynne*	£150

LIVERPOOL.—For reconstructing drainage and new water-closets to dwelling-houses, Nos. 28 to 46, Brainerd-street, and altering water supply and supplying new baths, etc., to dwelling-houses, Nos. 1 to 21, Rockhouse-street, for Mr. H. Stacey. Mr. J. H. McGovern, architect:—

T. Calderbank & Son*	£262 3

LONDON.—For reconstruction of second-class swimming bath, for the Westminster City Council:—

T. W. Haylock & Co.	£330 0	Love & Co.	£252 15
T. Coulthard	278 0	Wright & Son	241 0
J. Styles & Co.	259 10	Burton Bros.*	214 0

LONDON.—For works, for the Whitechapel Guardians:—

Renewal of Zinc Roof at Vallance-road Infirmary.

C. Thomerson, 263, Hackney-road, N.E.*	£99

Structional Repairs at Nos. 403, 405, 407, and 409, Mile End-road, E.

R. Wollaston & Co., 40, Turner's-road, Limehouse*	£47

LONDON.—For the erection of a handicraft centre for twenty boys on the Shelburne-road site, Islington, E., for the London County Council:—

Treasure & Son, Ltd.	£979 0 0
F. Bull	927 0 0
McLaughlin & Harvey, Ltd.	916 6 4
A. Roberts & Co., Ltd.	890 0 0
Patman & Fotheringham, Ltd.	841 0 0
E. Lawrence & Sons, Ltd.	831 0 0
W. Johnson & Co., Ltd., Wandsworth-common*	813 0 0

[The Architect's estimate, comparable with the tenders, is £853.]

MACCLESFIELD.—For alterations at the infirmary, for the Governors of the Macclesfield General Infirmary. Mr. N. Hartley Hacking, architect, 50, Blackfriars-street, Manchester. Quantities by architect:—

T. R. Lawton	£520	J. Clayton	£476
Clayton Bros.	515	B. Cooke & Son	464
Gorton & Wilson	492	G. Roylance & Co., Ltd., Macclesfield*	450
G. Simpson & Son	480		

MACHRIHANISH.—For the construction of a stone lifeboat house and reinforced concrete (Considère system) shipway at Port Namarve, near Machrihanish, for the Committee of Management of Royal National Lifeboat Institution. Mr. W. T. Douglass, M.Inst.C.E., Engineer and Architect to the Institution:—

W. White & Co.	£3,478 14 3
Executors of J. Arundel	2,195 13 9
Scott, Marshall, & Co.	1,857 17 0
J. Adams & Co., Glasgow*	1,833 17 11

PETERHEAD (Aberdeenshire).—For the construction of a corrugated steel and timber lifeboat house and solid concrete and rainforced concrete (Considére system) slipway on a site adjoining Lodge-walk, for the Committee of Management of the Royal National Lifeboat Institution. Mr. W. T. Douglass, M.Inst.C.E., Engineer and Architect to the Institution:—

W. Stuart & Son	£3,469 3 10
W. Harbrow	2,801 11 4
Executors of J. Arundel	2,762 13 4
Darlington Construction Co.	2,729 3 8
J. Adams & Co.	2,576 10 11
Scott, Marshall, & Co., Edinburgh*	2,563 10 0

SUTTON (Surrey).—For the erection of new narthex, porch, and baptistry to Christchurch, Sutton, Surrey, for the Building Committee appointed by the Church Council. Mr. Douglass G. Round, architect, Adelphi-terrace House, Strand, W.C. Quantities by Mr. Fredk. S. Henniker, Adelphi-terrace House, Strand, W.C.:—

—	Total.	Credit.	Nett.
	£ s.	£ s.	£ s.
Shopland & Co.	2,924 0	36 0	2,888 0
Freeman, Ltd.	2,850 0	25 0	2,825 0
J. Mead	2,813 0	17 0	2,796 0
J. Carmichael	2,755 0	3 10	2,751 10
E. J. Saunders	2,475 0	10 0	2,465 0
F. G. Minter	2,379 0	—	2,379 0
Dove Bros.	2,375 0	25 0	2,350 0
Jones & Sons, Sutton*	2,247 0	30 0	2,217 0

RADYR and SULLY.—For widening (a) Tynant-road, Radyr, and (b) Sully-road, Sully, for the Llandaff and Dinas Powis Rural District Council. Mr. James Holden, A.M.Inst.C.E., Surveyor:—

	Sully. (Sully-road.)	Radyr. (Tynant-road.)
Vickery Bros.	£313 11 1	—
J. Britton	327 6 0	—
J. Denham	336 3 8	£209 10 0
W. Rees	361 10 6	—
W. Cox	379 15 6	279 1 4
H. Ringham	389 0 0½	283 15 10½
H. S. Rendell	389 6 3	—
G. Strachan	396 0 7	247 18 5
A. Davies	407 0 11	—
A. G. Collins & Co.	432 19 0	—
Mackay & Davies	436 11 0	239 12 2
R. Pomeroy & Co.	466 14 6	252 0 5
J. Sutherland	480 19 3	266 18 10
H. Murray	495 0 0	257 0 0
Osmond Bros.	366 0 2	193 17 6
Hatherley & Co.	607 10 1	349 10 5
E. Rees, The Elms, Whitchurch, near Cardiff*	312 15 10	190 9 4
J. B. Packer	—	194 4 5½

SOUTHAMPTON.—For additions to the Pavilion Royal Pier, for the Harbour Board. Mr. E. Cooper Poole, A.M.Inst.C.E., Engineer and Surveyor to the Board:—

		Date of Completion
F. Grace	£705	May 30.
H. Stevens & Co.	690	9 weeks.
F. Osman & Co.	687	May 1.
Jenkins & Sons, Ltd.	683	8 weeks.
C. Daysh	678	12 weeks.
J. E. Franklin & Co., Ltd.	670	May 1.
J. Douglas	634	April 29.
J. Nichol, Southampton*	630	April 30.

WEEDON BEC.—For alterations and additions to the Church Schools. Messrs. Law & Harris, architects, 1, Sheep-street, Northampton:—

R. Cosford	£1,778 0	W. W. Webster	£1,553 0
W. T. Marsh	1,775 8	Harris & Harris	1,549 0
E. Green	1,674 0	W. Higgins	1,538 0
E. Archer & Sons, Ltd.	1,665 0	Souster	1,533 0
T. Heath, Ltd.	1,625 0	D. Ratledge	1,529 0
H. Martin, Ltd.	1,594 0	Beardsmore & West, Northampton*	1,518 0
W. Heap	1,589 0		

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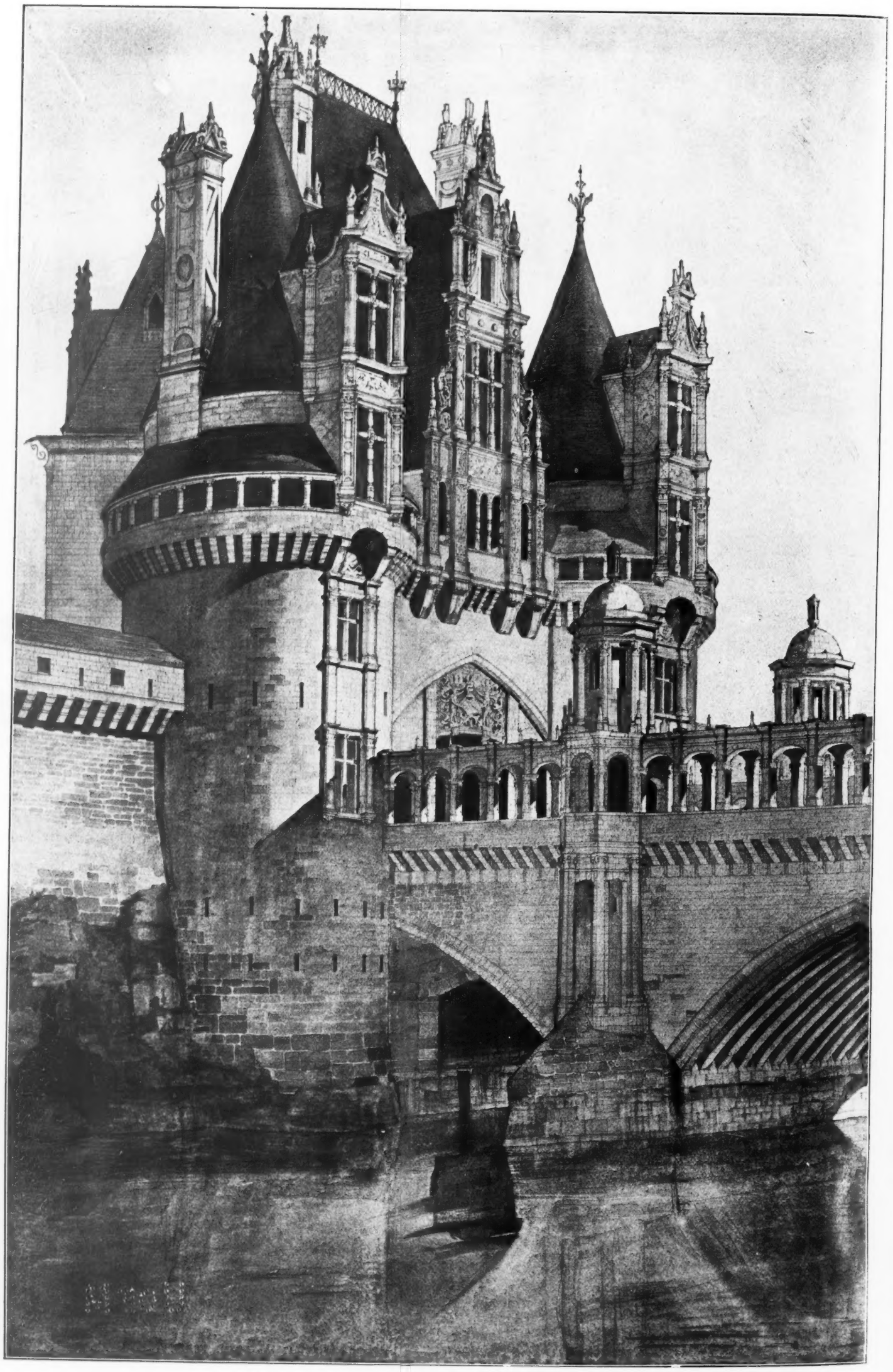

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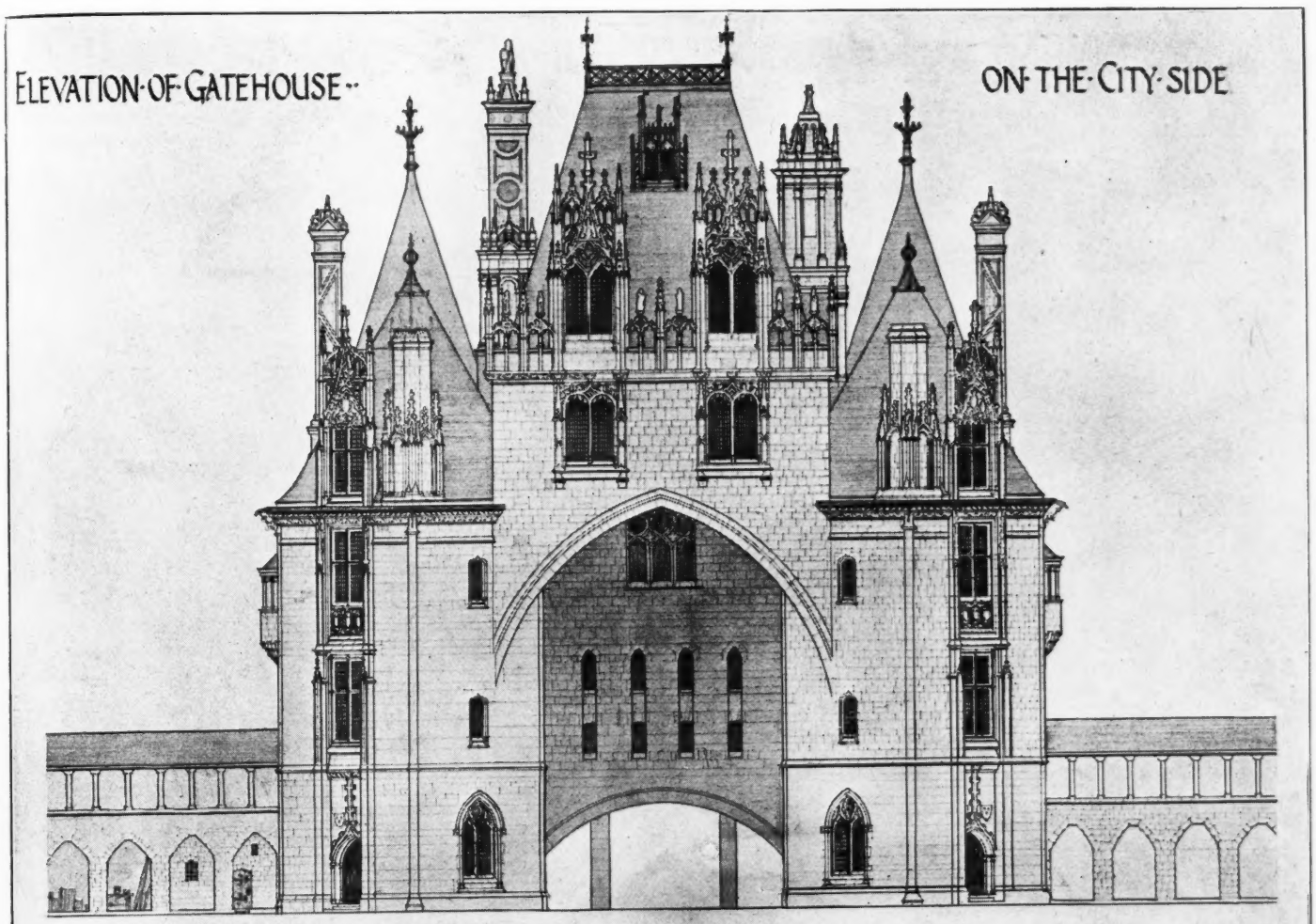

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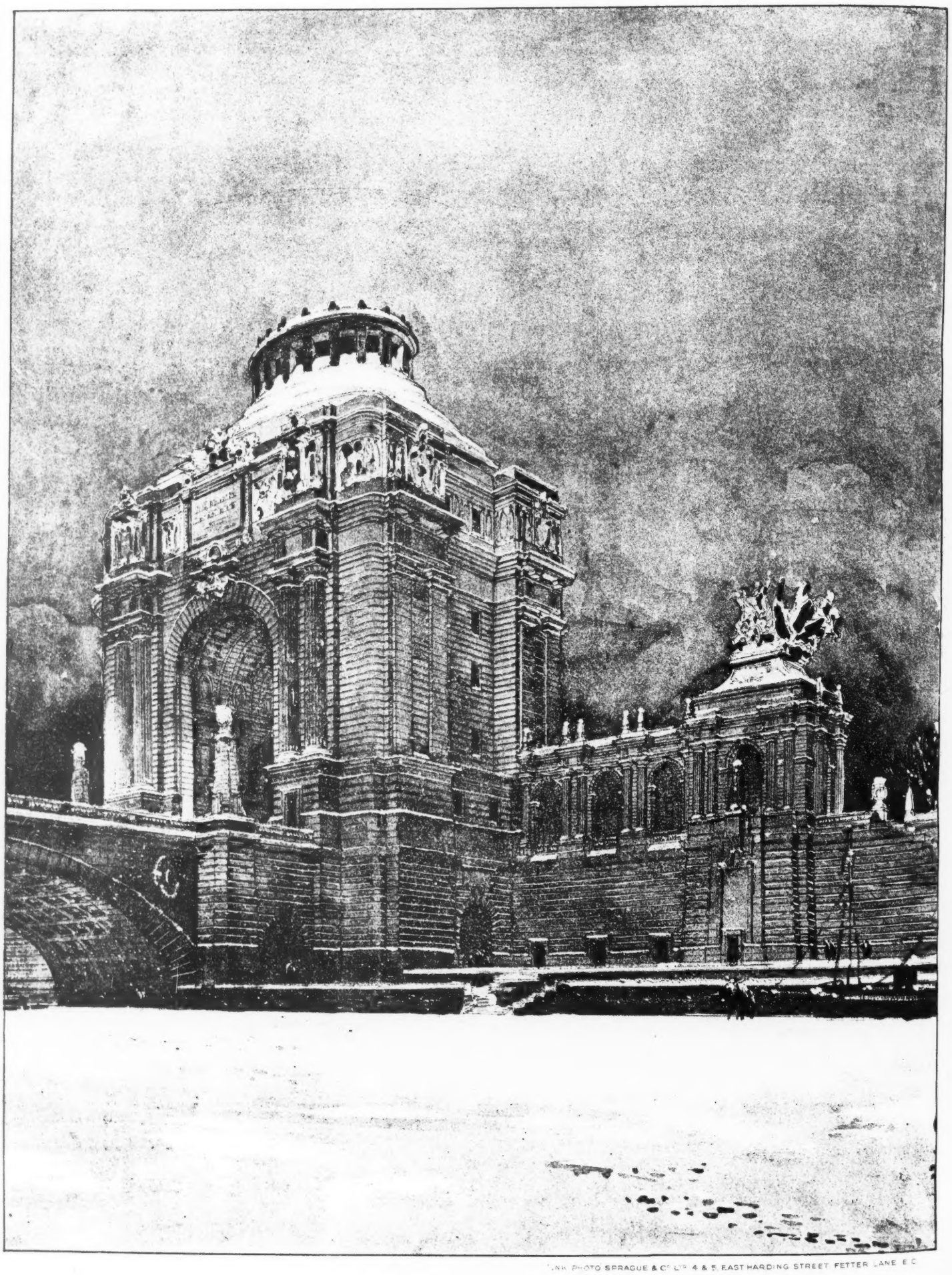

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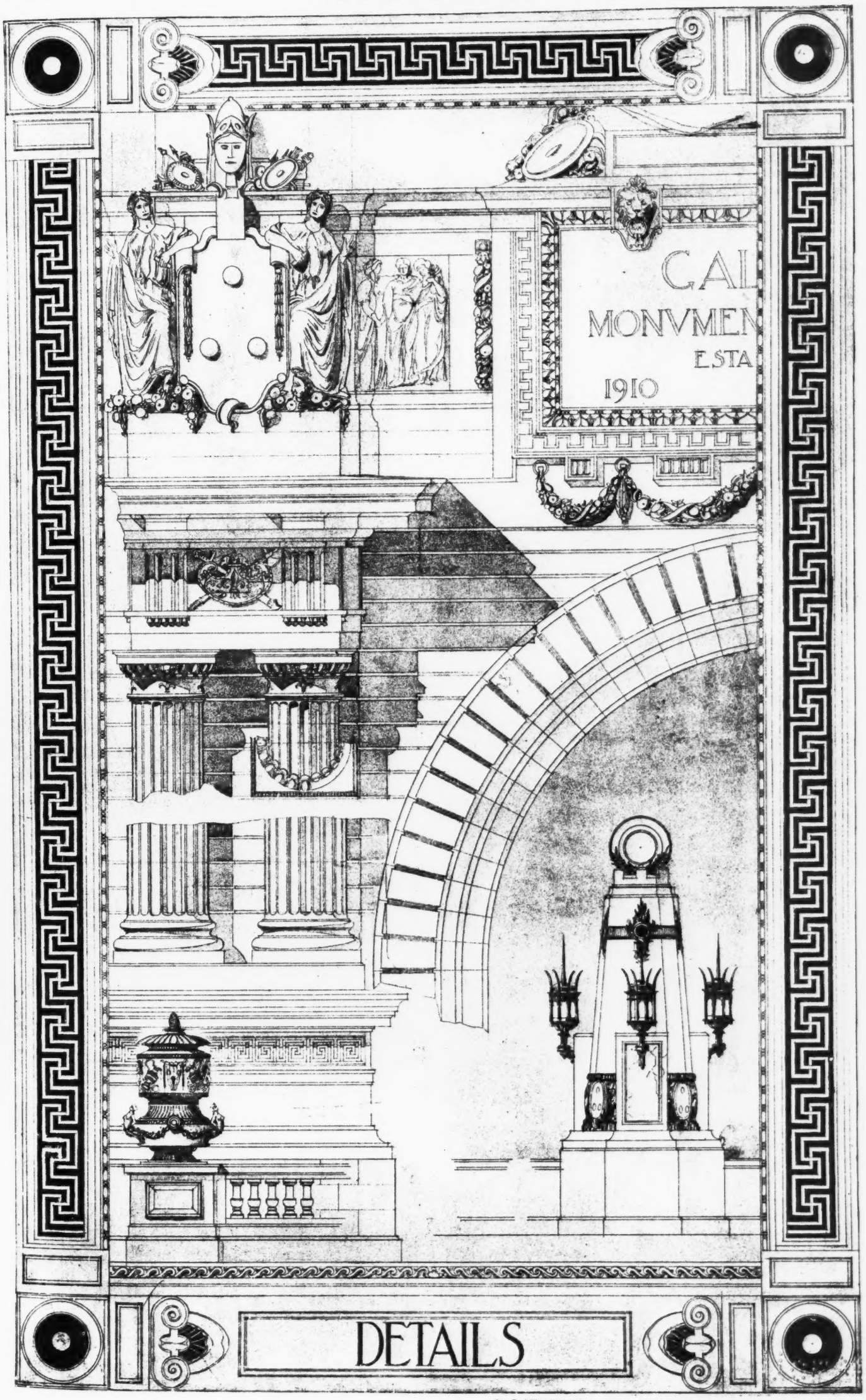

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